

PERMANENT WAY  
**ROLLING STOCK**  
AND  
TECHNICAL WORKING

**RAILWAYS**

BY

**CH. COUCHE**

INSPECTEUR GÉNÉRAL DES MINES, PROFESSEUR DE CONSTRUCTION ET DE CHEMINS DE FER A L'ÉCOLE DES MINES,  
PRÉSIDENT DE LA COMMISSION PERMANENTE DES RÈGLEMENTS ET DES INVENTIONS CONCERNANT LES CHEMINS DE FER,  
PRÉSIDENT DU COMITÉ CONSULTATIF DES MACHINES A L'EXPOSITION UNIVERSELLE DE 1878, ET DE LA CLASSE 64  
(MATÉRIEL DES CHEMINS DE FER) DU JURY INTERNATIONAL, ETC.

**VOLUME III WITH ATLAS OF 21 PLATES**

TRANSLATED FROM THE FRENCH BY

**J. EDWARDS WILSON**

LATE ENGINEER IN CHIEF OUDR AND ROHILKUND RAILWAYS

— ATLAS —

Vol. III, in-quarto, with Atlas. — Price £ 3. — The Whole to be completed in three Volumes.

DULAU & Co  
37, SOHO SQUARE  
LONDON

DUNOD, ÉDITEUR  
QUAI DES GRANDS-AUGUSTINS 49,  
PARIS

1882

The rights of translation and reproduction are reserved



# PLATES

OF THE

## THIRD VOLUME

---

PRODUCTION AND DISTRIBUTION OF STEAM.  
 MEANS OF DESTROYING AND MODERATING VELOCITY.  
 POWER AND USEFUL EFFECT OF THE LOCOMOTIVE.  
 SUPPLEMENT : REVISION, ADDITIONS.

---

- Pl. I . . . . . — Locomotives. — Boiler — Evaporation. — Various details.
- Pl. II . . . . . — Locomotives. — Boiler — Stays — Smoke-consuming apparatus — Condensation.
- Pl. III . . . . . — Locomotives. — Erosions — Stays — Smoke-consuming apparatus.
- Pl. IV . . . . . — Locomotives. — Boilers — Regulators — Valves — Blowers.
- Pl. V . . . . . — Locomotives. — Exhaust — Chimneys — Distribution.
- Pl. VI . . . . . — Locomotives. — Different valve-motions.
- Pl. VII . . . . . — Locomotives. — Different valve-motions.
- Pl. VIII . . . . . — Locomotives. — Some details of the machinery.
- Pl. IX . . . . . — Locomotives. — Effort of traction at the dead point and up to a certain limit of reverse admission — Counter-Steam.
- Pl. X . . . . . — Means of stopping. — Reversing the valve motion — Injection. — Landsie, Krauss Systems.
- Pl. XI . . . . . — Divers brakes.
- Pl. XII . . . . . — Divers brakes.
- Pl. XIII . . . . . — Tender and wagon — Brakes.
- Pl. XIV . . . . . — Various brakes. — Resistance of trains.
- Pl. XV . . . . . — Various brakes. — Tachometer — Resistance of trains — Influence of curves.
- Pl. XVI . . . . . — Brake with counterpoise and transmission of the Northern of France — Newall's brake.
- Pl. XVII . . . . . — Useful effect of locomotives. — Supplement.
- Pl. XVIII . . . . . — Work of expansion and of compression. — Steam and water — Supplement.
- Pl. XIX . . . . . — Supplement.
- Pl. XX . . . . . — Supplement.
- Pl. XXI . . . . . — Supplement.



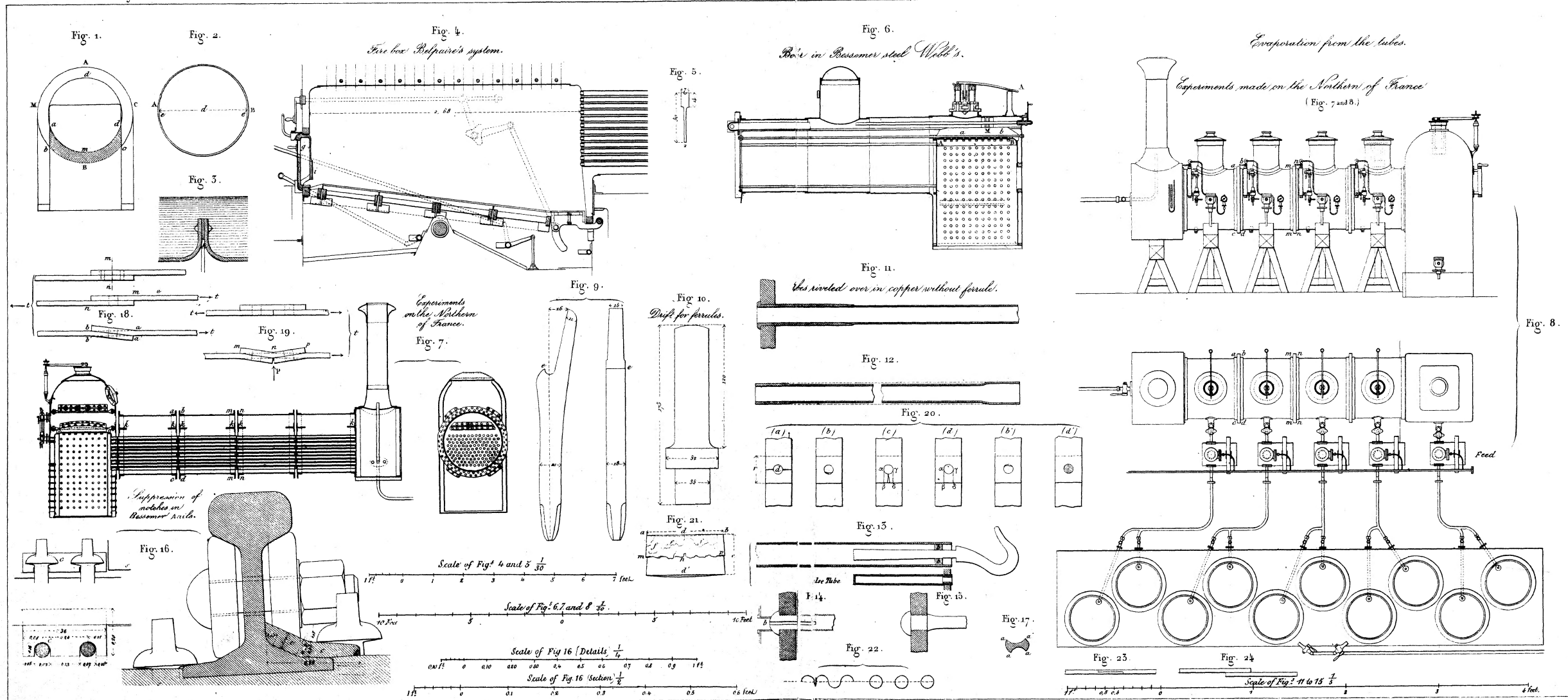




Fig. 1. Mr. Fairlie's boiler.

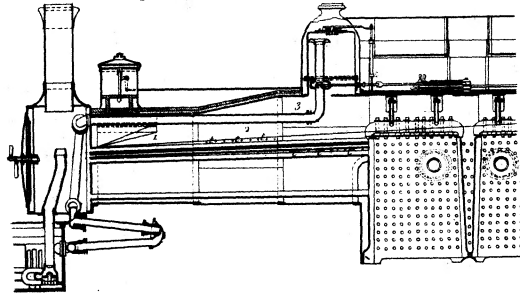


Fig. 2. Fire-box with circular crown.

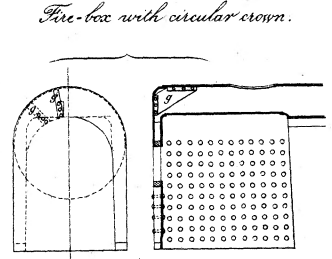


Fig. 6. Fire-box of compound shape by Mr. Becker.

(Northern of Austria line) steel boiler with two shells.

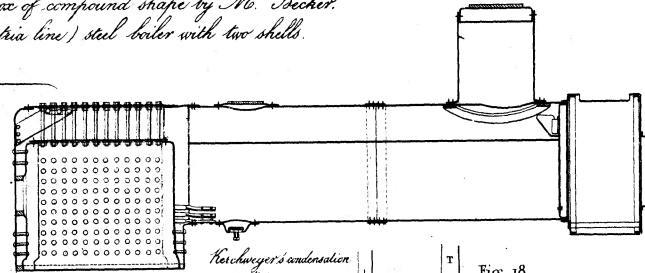
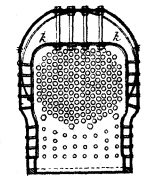


Fig. 5. Mr. Connell's fire-box

with water spaces and stays across the roof.

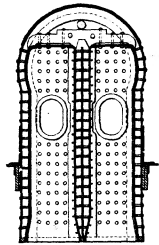
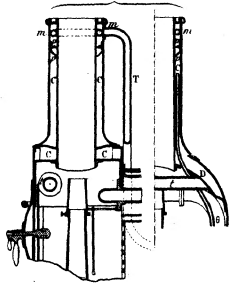


Fig. 14.



Condensation of exhaust steam (Cessons line.)

Fig. 16.

(Figs. 16 and 17.)

Fig. 4. Boiler of the Société de construction of Besançon.

(Exhibition of Vienna in 1873)

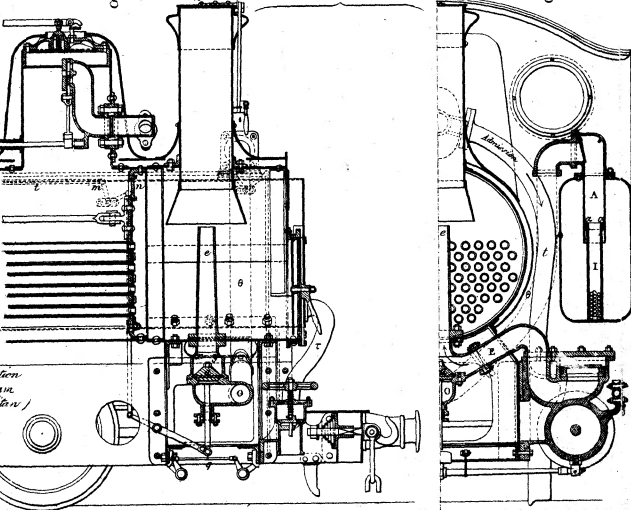
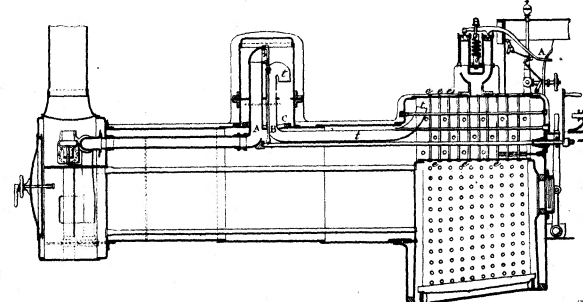
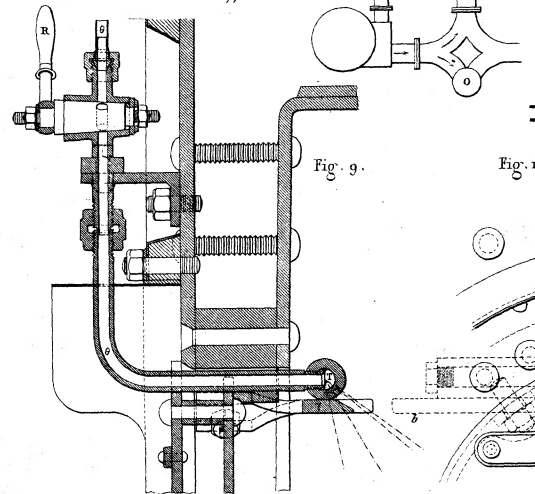


Fig. 17.

Reschwyger's condensation apparatus.

Fig. 18.



Cherry's smoke-consuming apparatus.

(Figs. 8 to 12.)

Fig. 8.

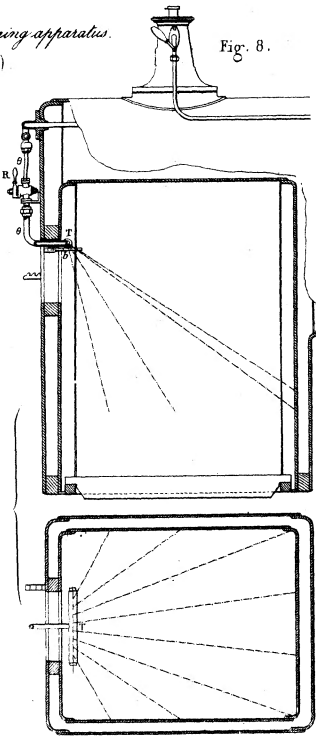


Fig. 3. Eucurus engine. Curved stays.

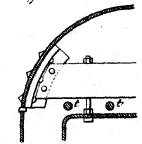


Fig. 13.

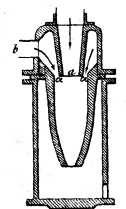


Fig. 15.

Condensation of the steam (Metropolitan)

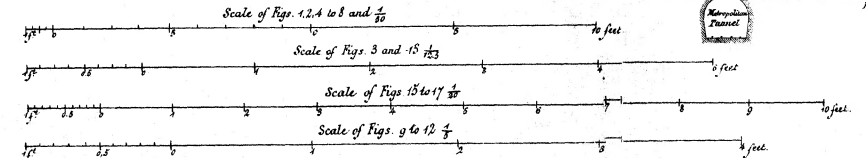
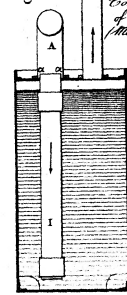


Fig. 19.



Fig. 12.

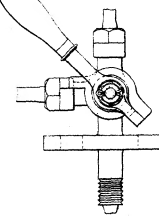


Fig. 7. Ordinary blow-off.

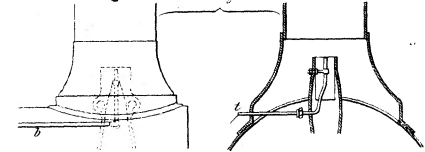
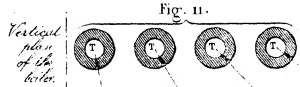


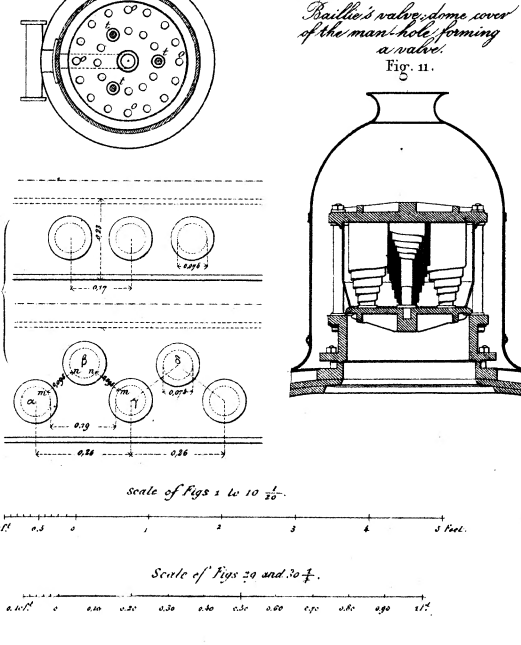
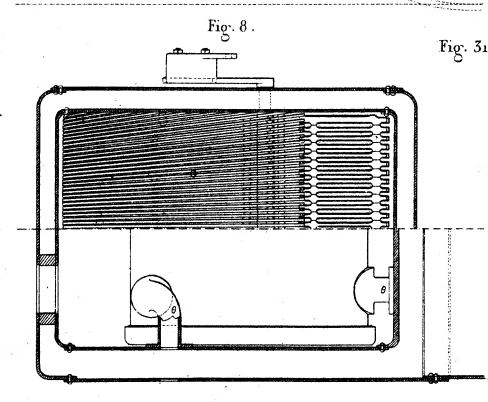
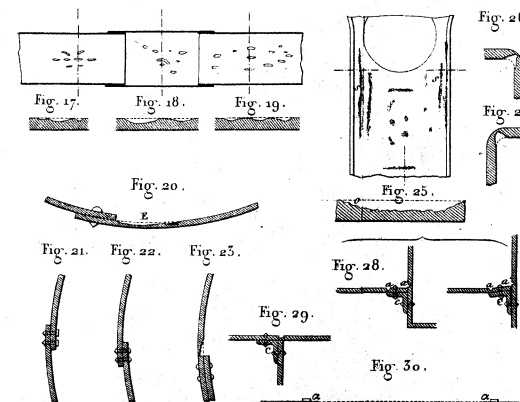
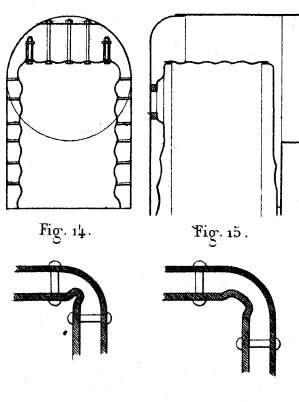
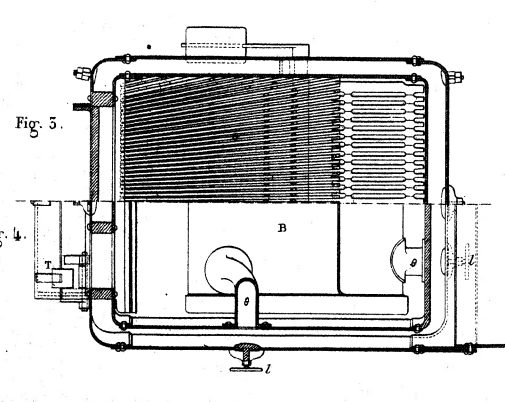
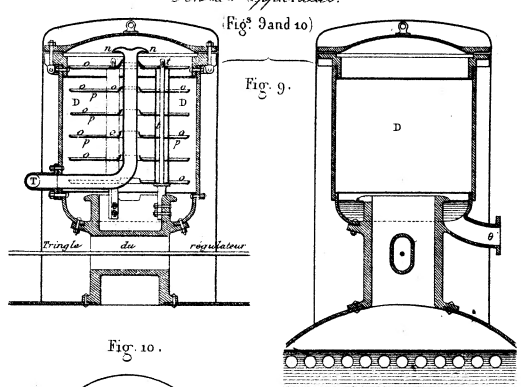
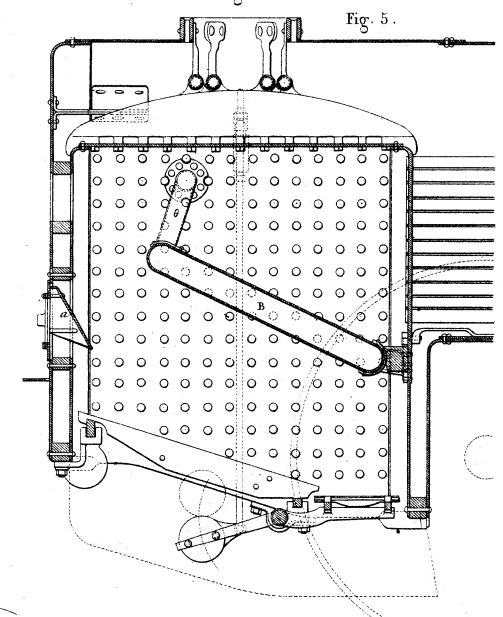
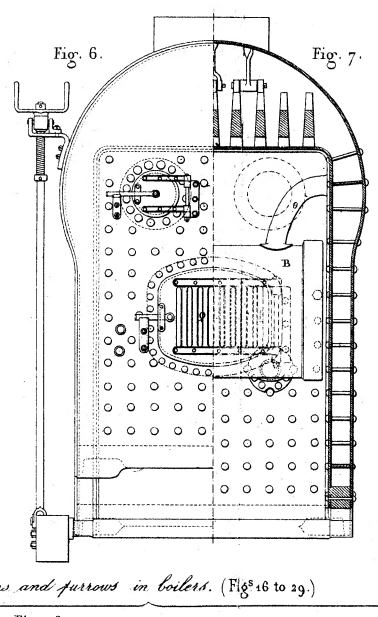
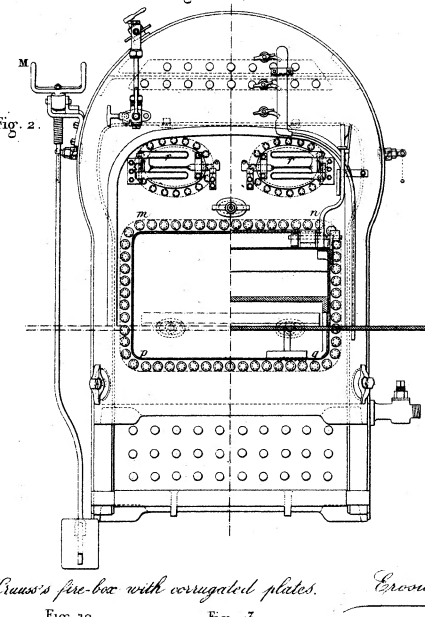
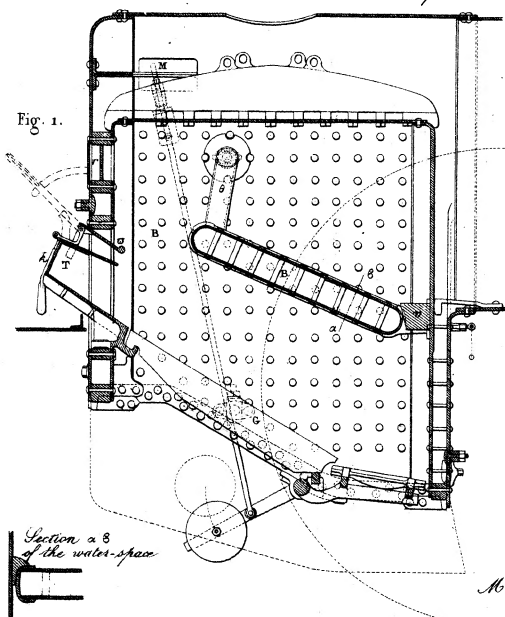
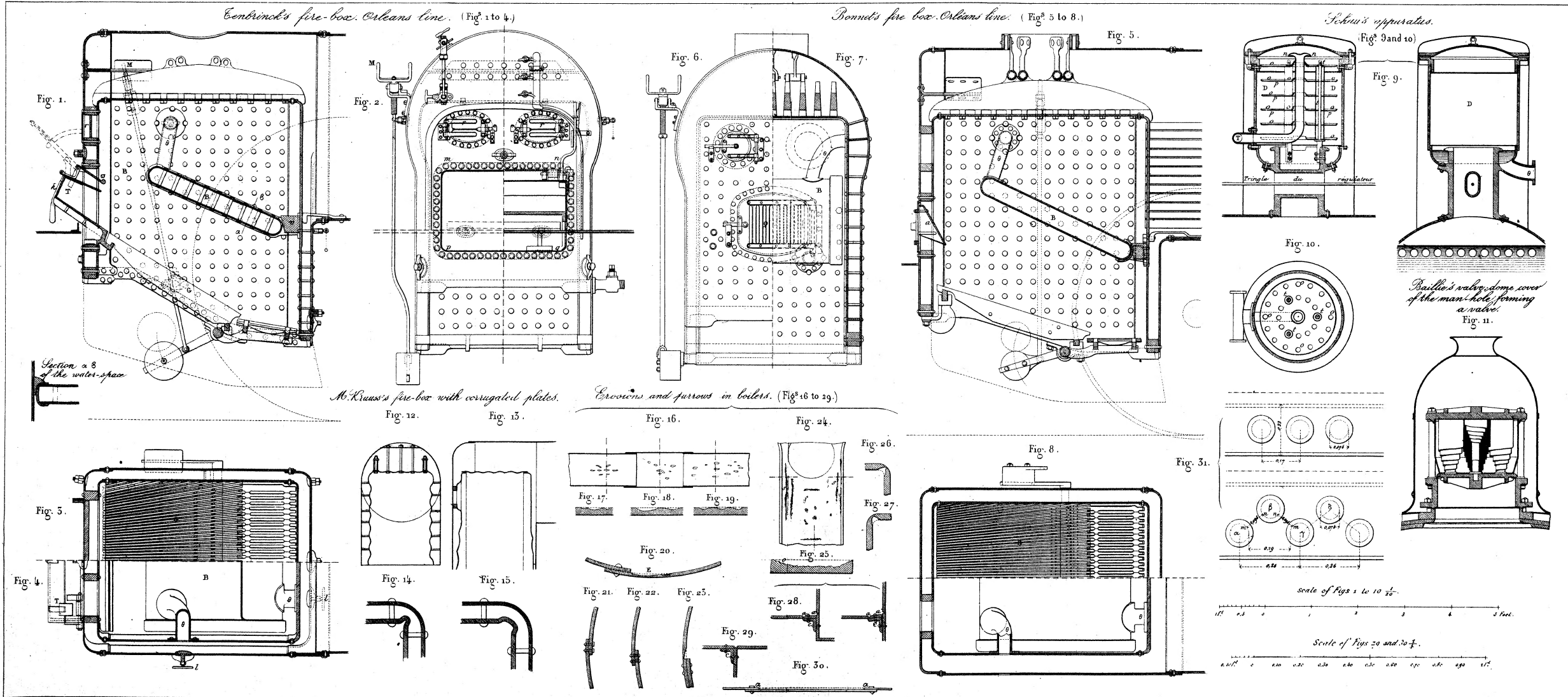
Fig. 11.



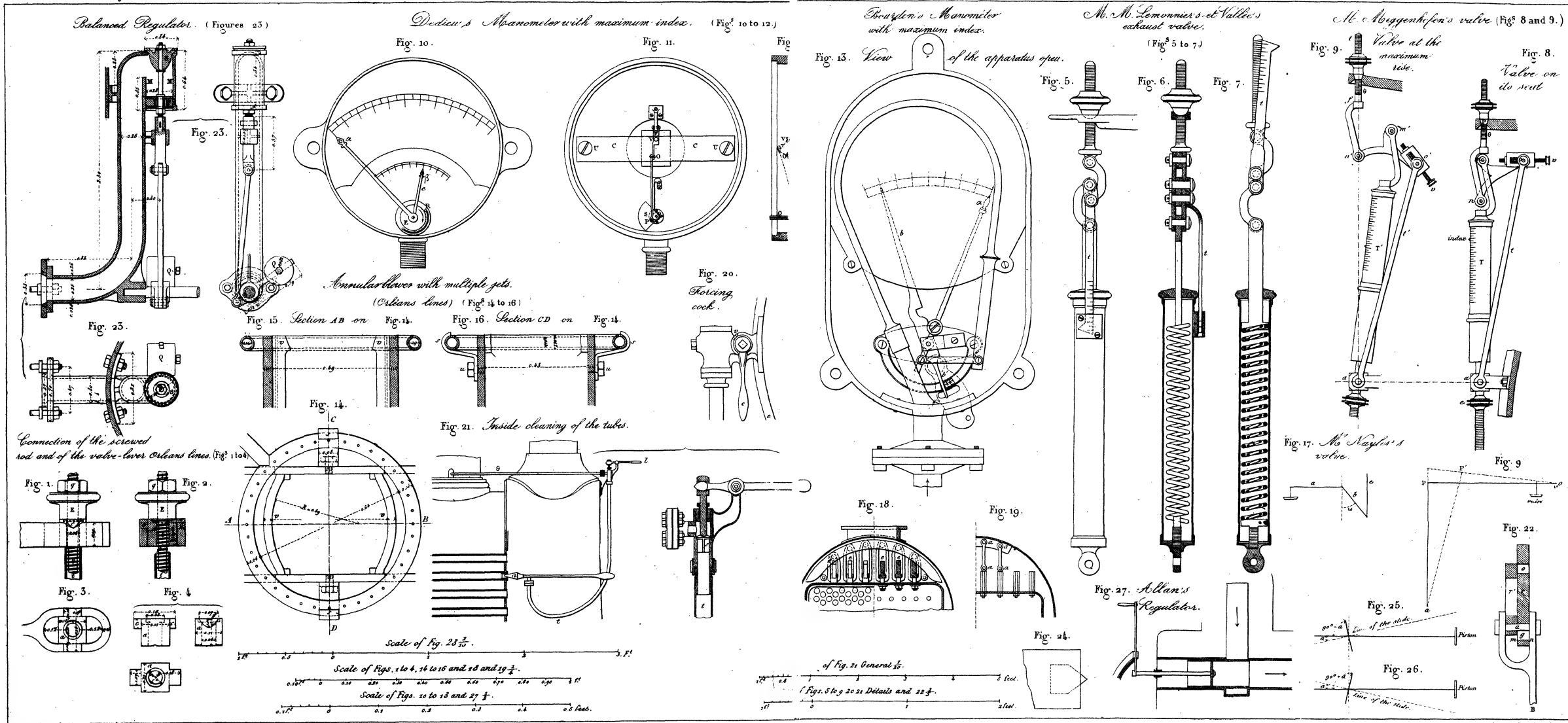
Vertical plan of the boiler.













C. COUCHE. Railways

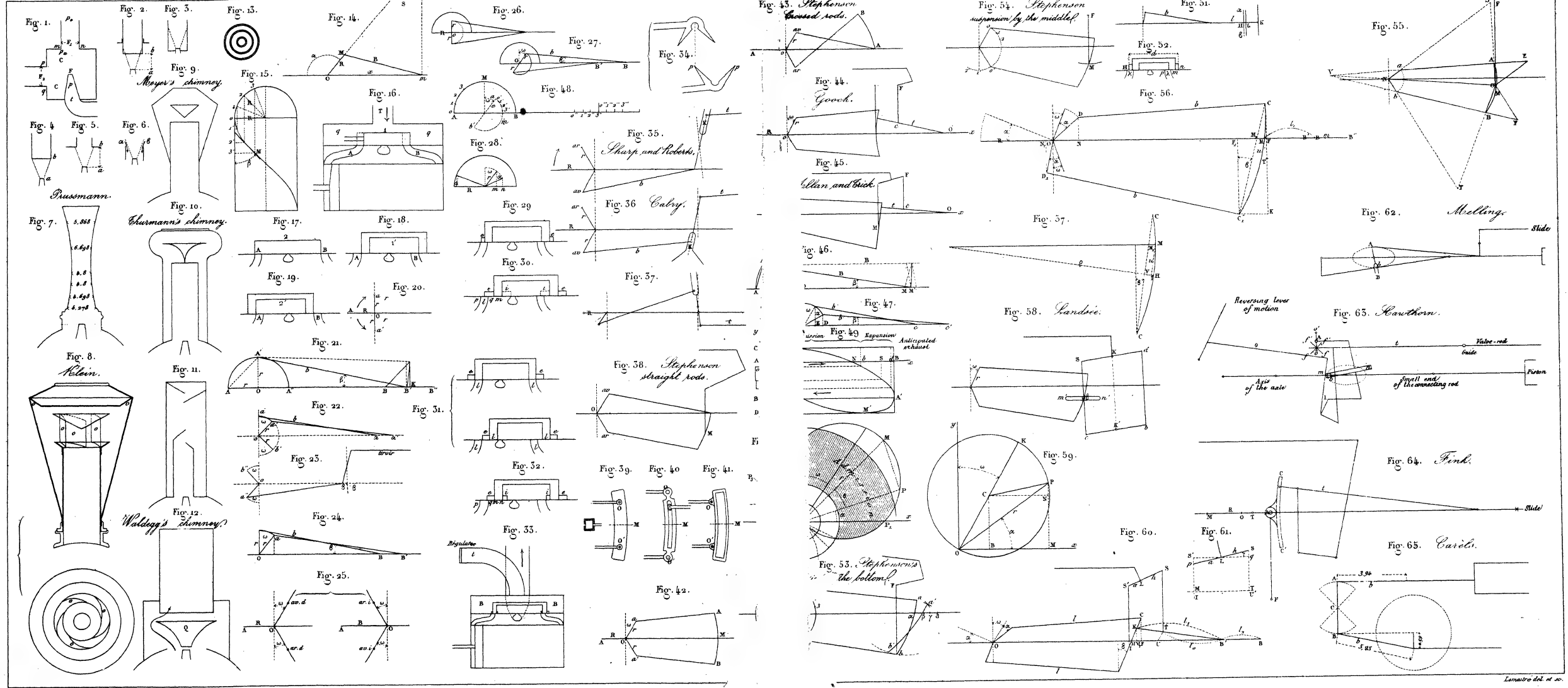




Fig. 1. Slides of the Mediterranean engine Clampton.

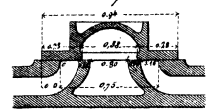


Fig. 2. Passenger

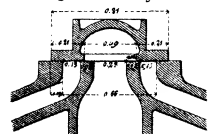


Fig. 3. Ordinary

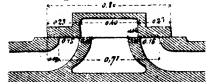


Fig. 4. Goods

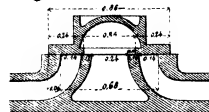


Fig. 12.

Gouette's expansion.

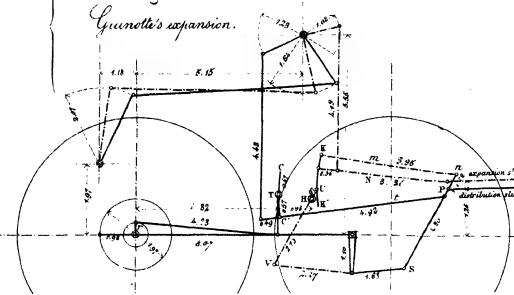
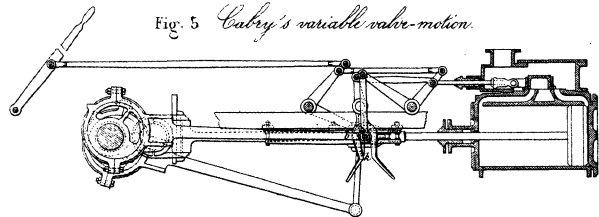


Fig. 5. Cabry's variable valve-motion.



Wilschaert's valve-motion with single eccentric.

Fig. 7.

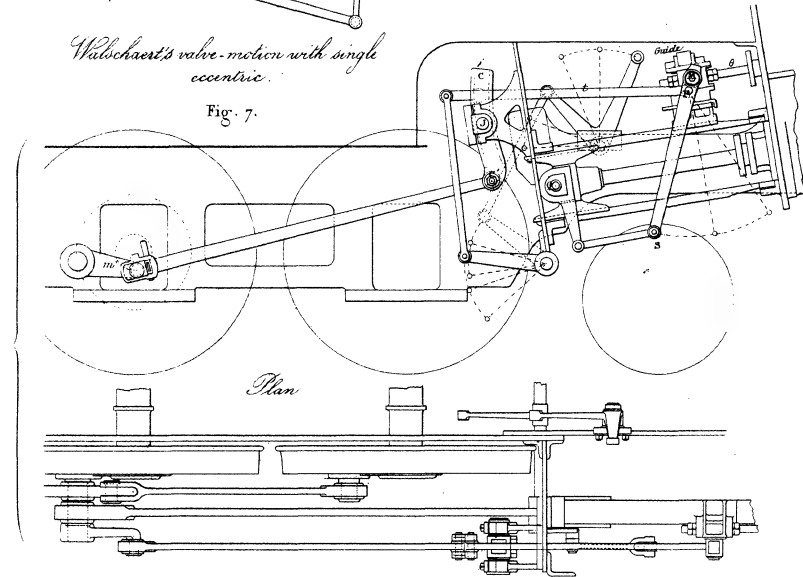


Fig. 6. Fischer's valve-motion with a single eccentric.

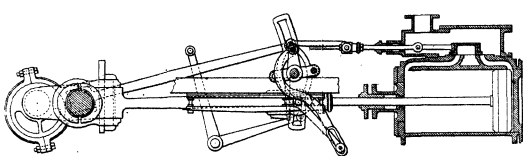


Fig. 9. Stewart and Hope's valve-motion with a single eccentric.

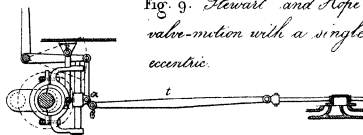


Fig. 8. Stewart and Hope's Fink's valve-motion with single eccentric.

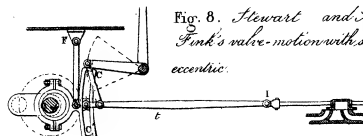


Fig. 10.

Stewart's valve-motion without eccentric.

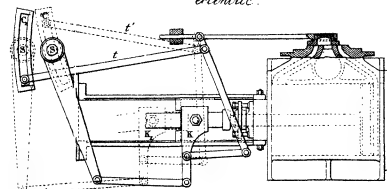


Fig. 13. Mediterranean engine similar to 1130 forward gear.

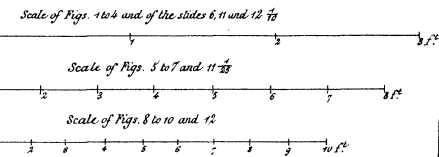
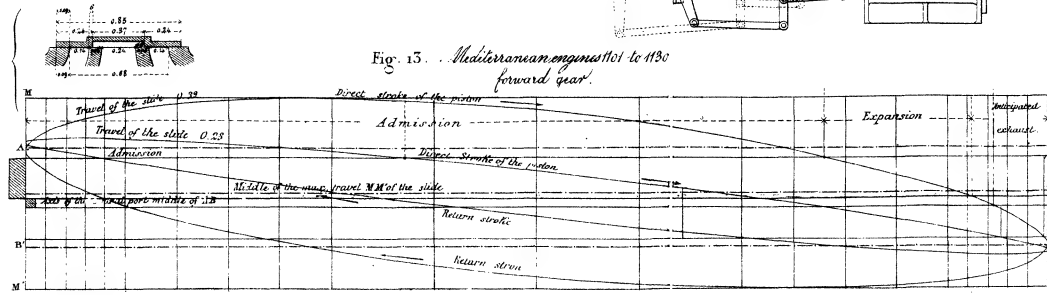


Fig. 11. Polonceau's expansion with two slides.

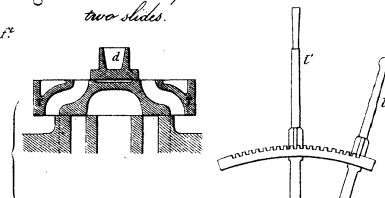
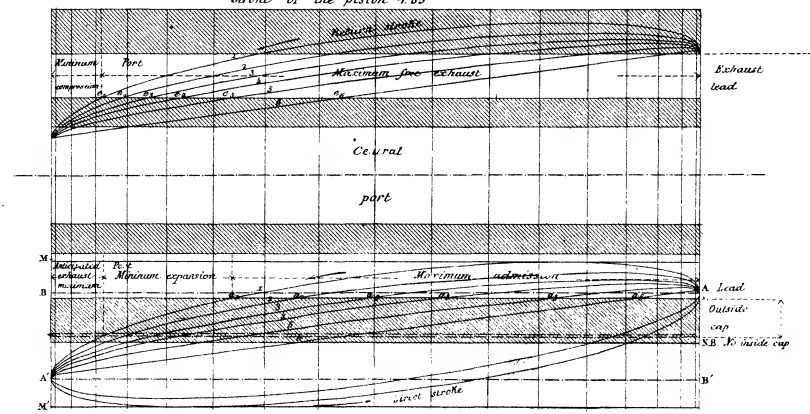


Fig. 14. Stewart and Hope's valve-motion (and Fink's) (See Fig. 8) forward gear.

Stroke of the piston 1.83







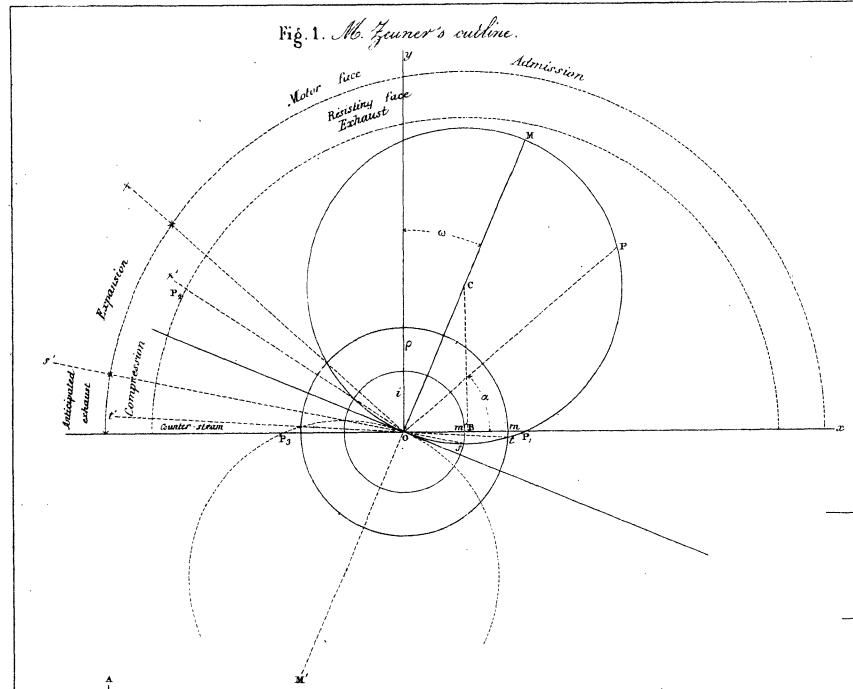


Fig. 2.

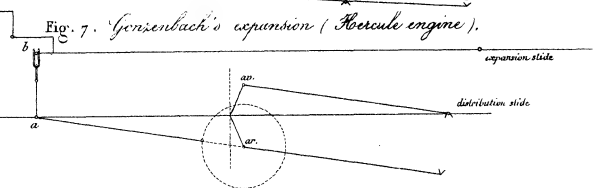
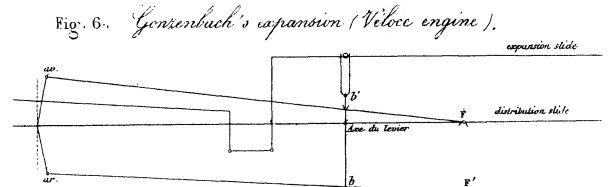
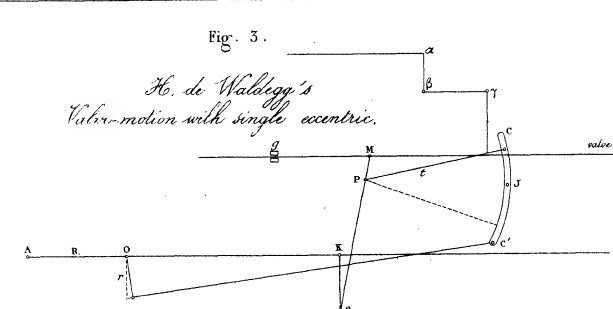
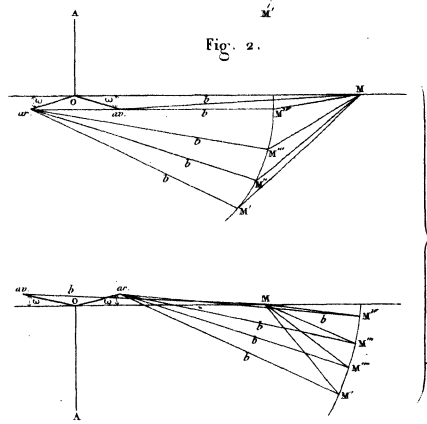


Fig. 8.

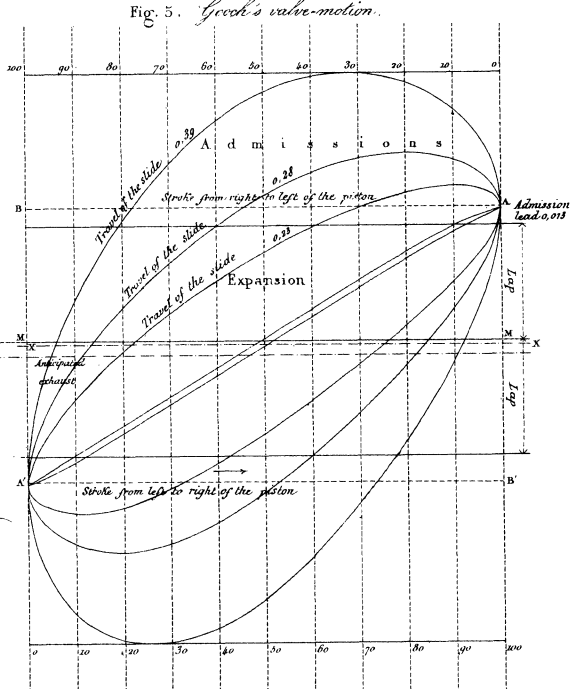
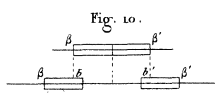
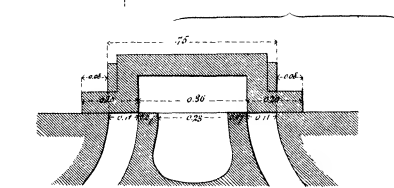
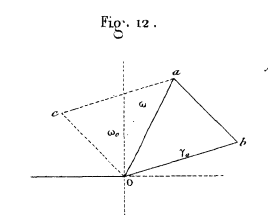
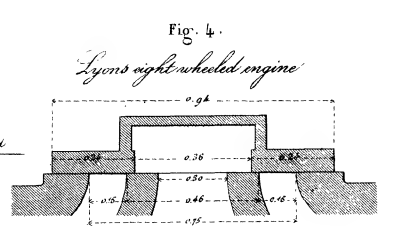
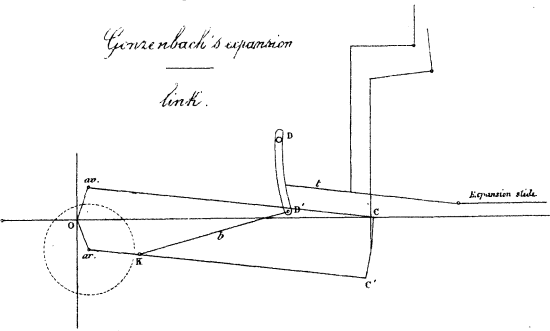
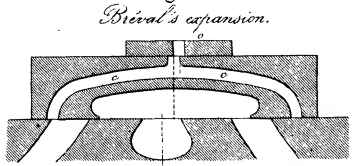
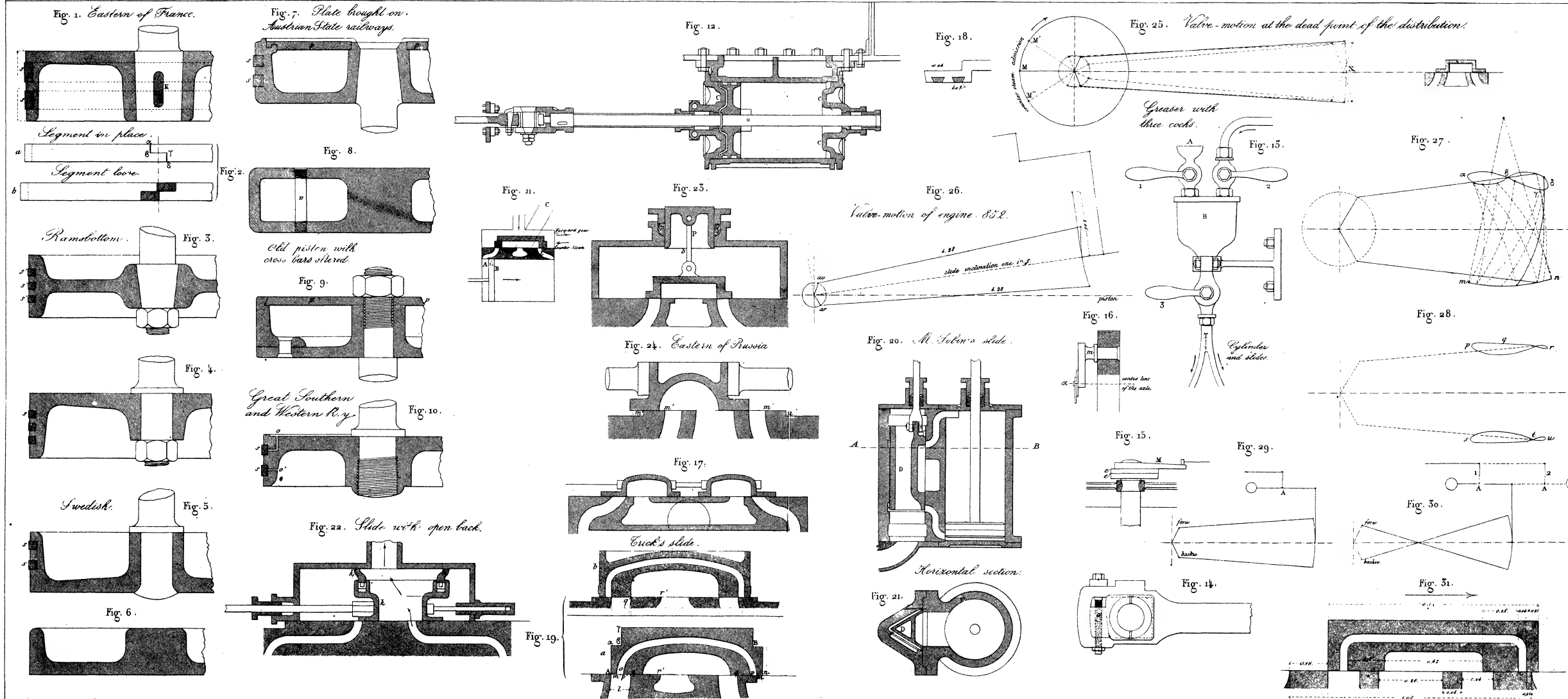


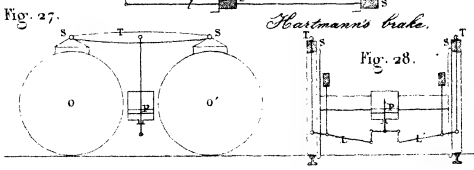
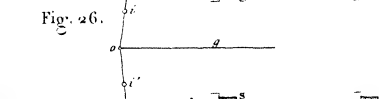
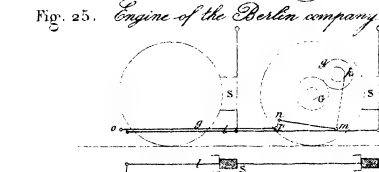
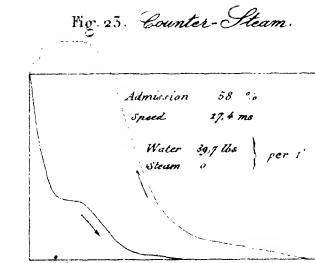
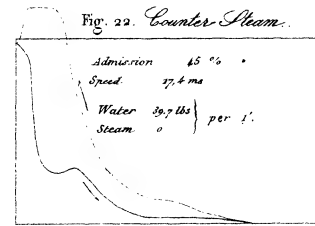
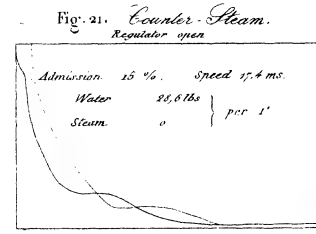
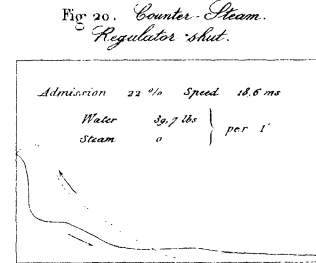
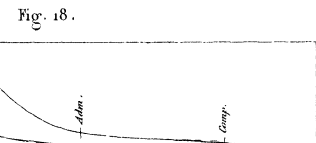
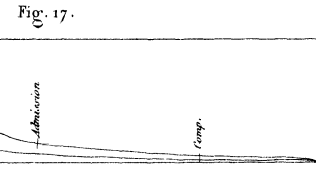
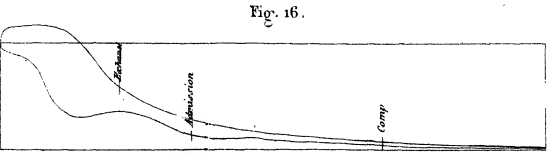
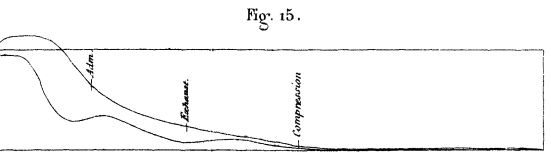
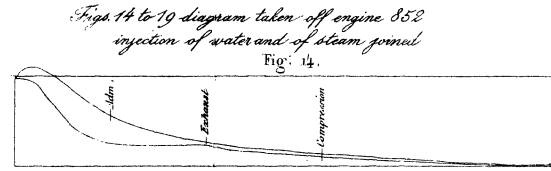
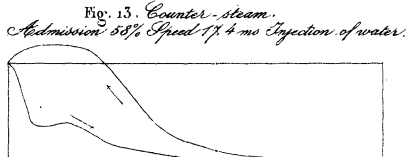
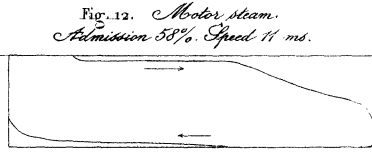
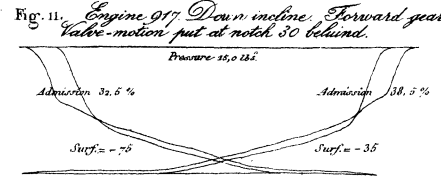
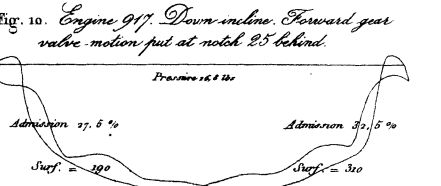
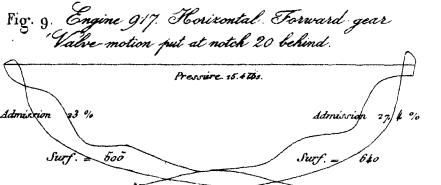
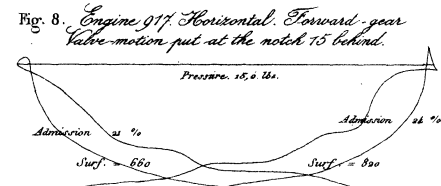
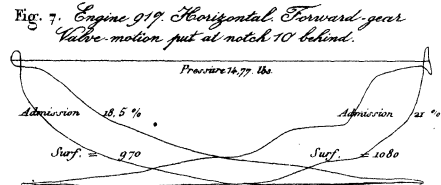
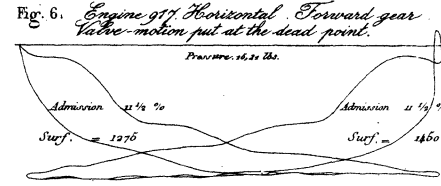
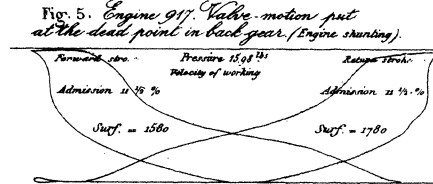
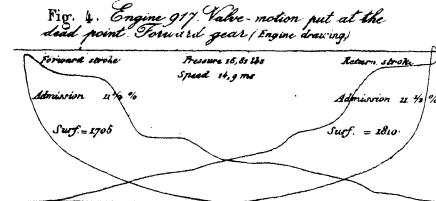
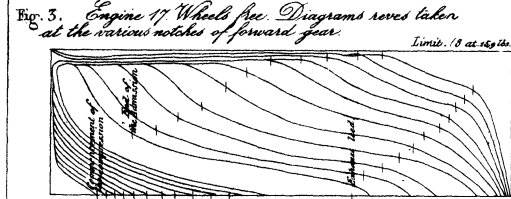
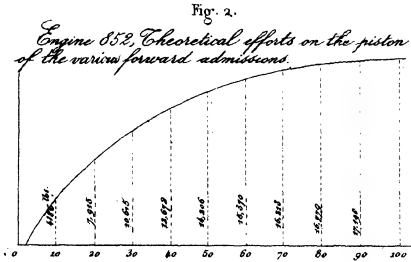
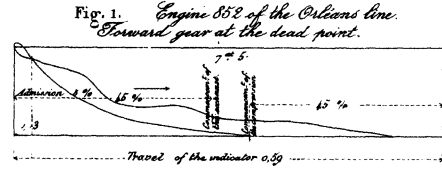
Fig. 11.













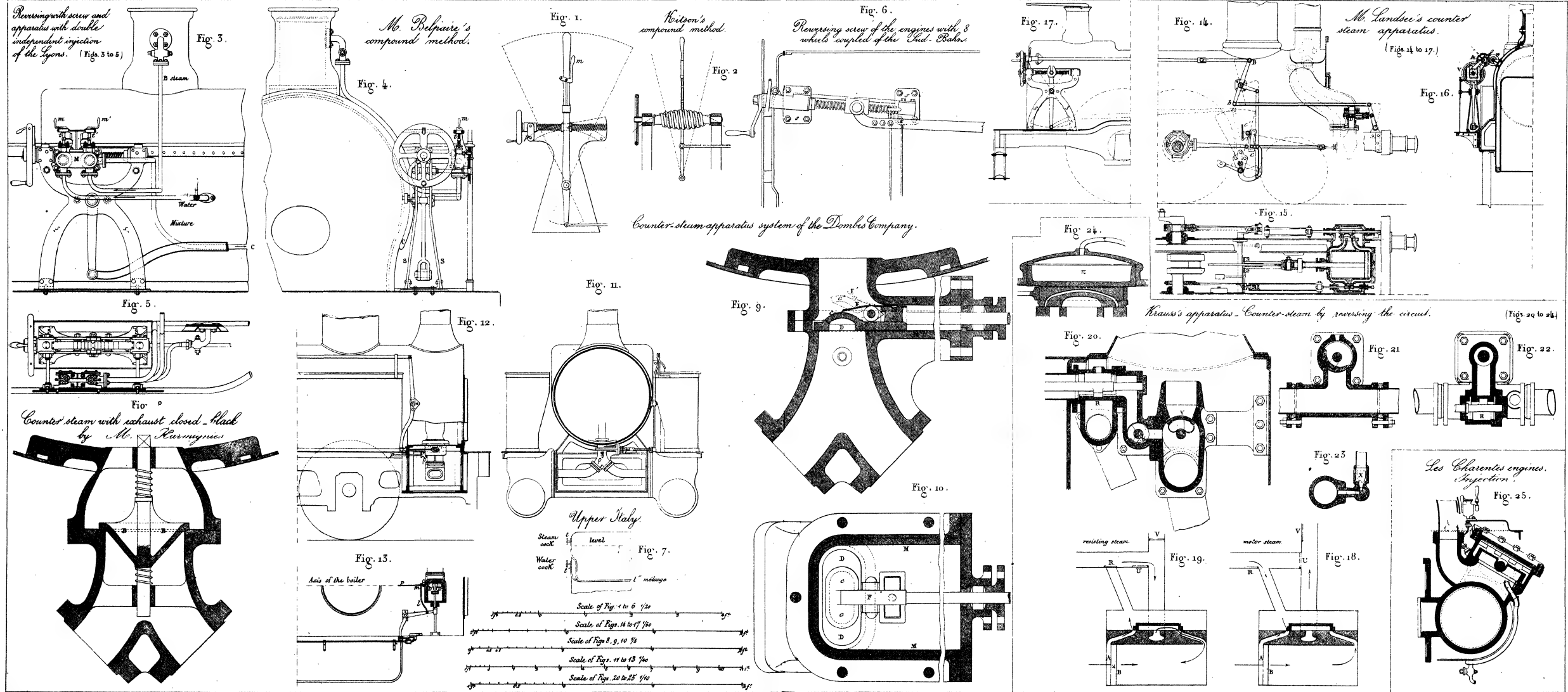






Fig. 1.

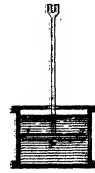


Fig. 2.

Brake of the Steindorf engine.

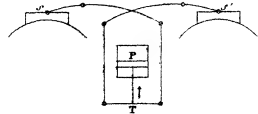


Fig. 3.

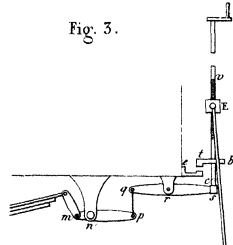


Fig. 4.

Noseda or Curi's brake.

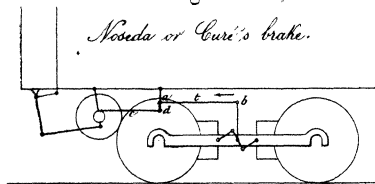


Fig. 5.

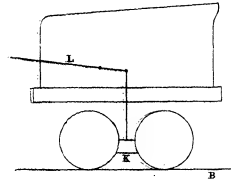


Fig. 6.

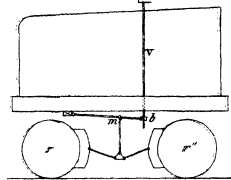


Fig. 7. Mr Courasse's impulsion brake.

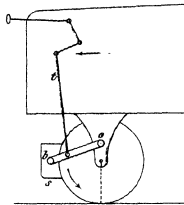


Fig. 8.

Cabritaui's brake.

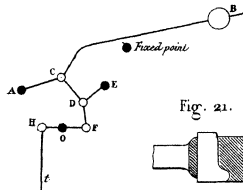


Fig. 21.



Fig. 15.

Laignel's brake.

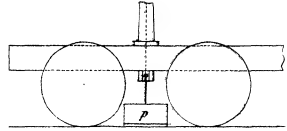


Fig. 17.

Mr Guirin's automotor brake.

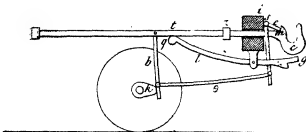


Fig. 10.

Capstan brake, Calogne and Minden line.

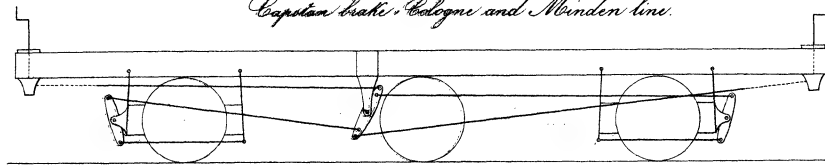


Fig. 26.

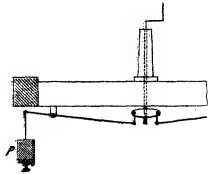


Fig. 18.

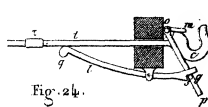


Fig. 24.

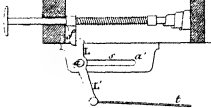


Fig. 19.

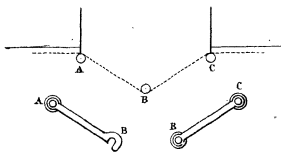


Fig. 14.

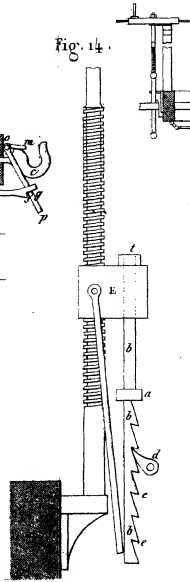


Fig. 11.

Mr. Brucogne's counterpoise screw brake.

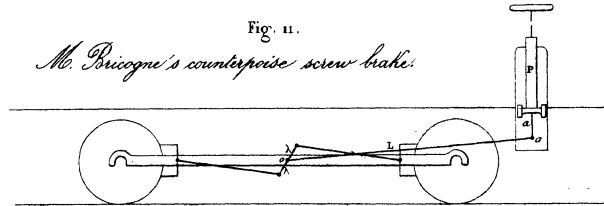


Fig. 12.

Mr. Brucogne's counterpoise and jack brake.

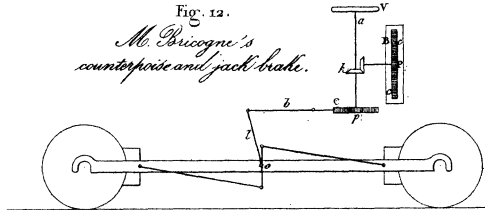


Fig. 13.

Mr. Brucogne's brake with two blocks on each wheel.

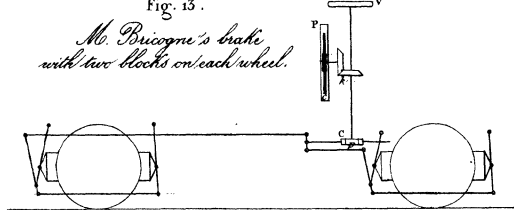


Fig. 20.

North London brake.

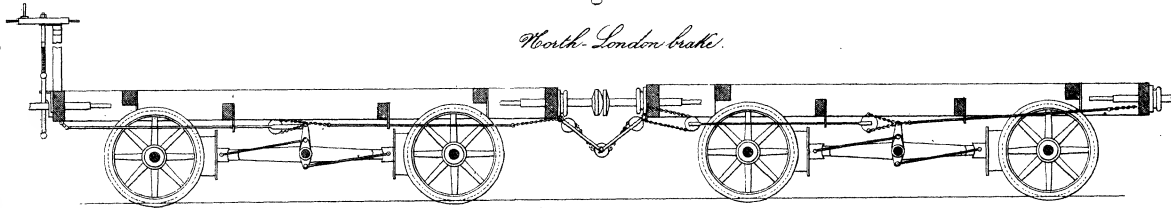


Fig. 22.

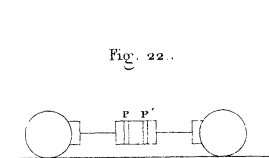


Fig. 9. Brake of the six-wheeled carriages on the Lyons line.

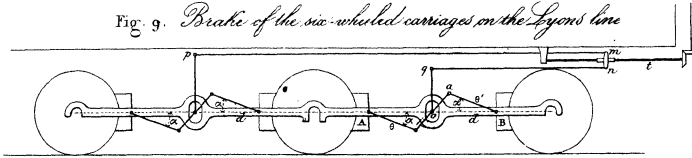


Fig. 23. Example of letting go at a distance. Plate-carriages.

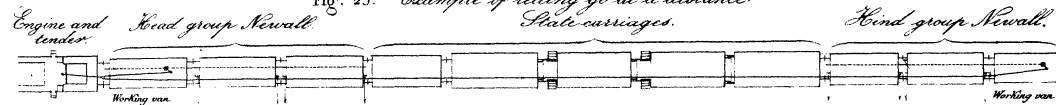




Fig. 1. *Brakes of the Western of France engines.*

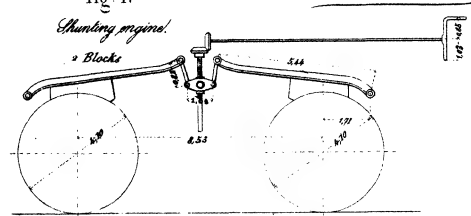
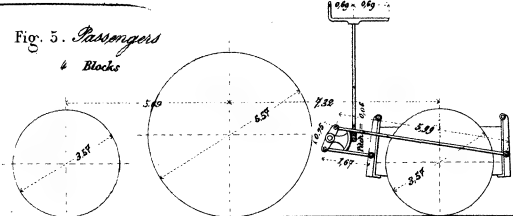


Fig. 5. *Passengers & Blocks*



(Fig. 1 6.)

Fig. 2. *Shunting engine & Blocks*

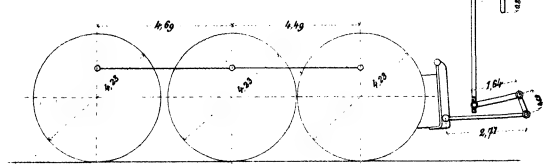


Fig. 6. *Goods.*

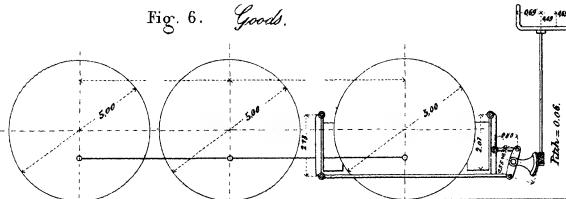


Fig. 3. *Suburban trains & Blocks*

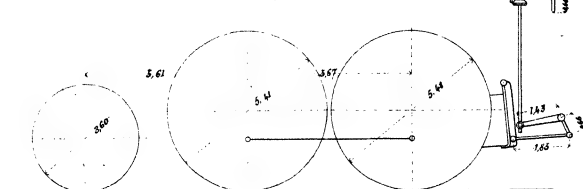


Fig. 7. *Engine of the Saao-Bavarian lines (Steam brake with skids)*

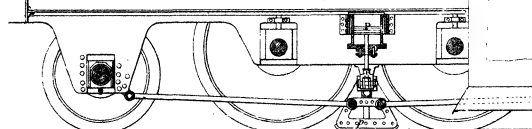


Fig. 4. *Suburban trains & Blocks*

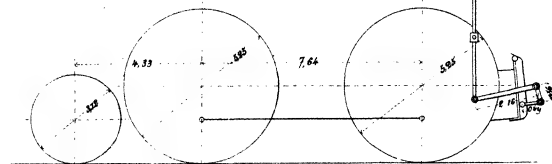


Fig. 8. *Plan*



Fig. 9.

*Mr. Adam's brake (Waggons)*

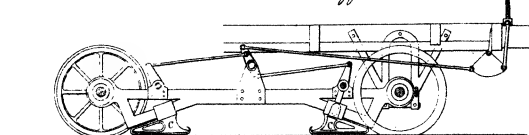


Fig. 11. *Tender with Stelmani's screw brake*

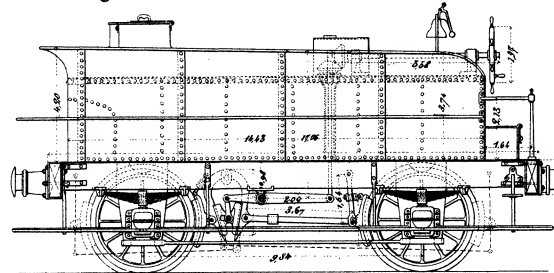


Fig. 12. *Van (Northern of France), with Stelmani's brake*

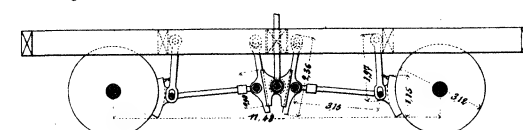


Fig. 10.

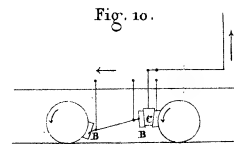


Fig. 14. *Tender with double screw brake Lyne from Paris to Lyon*

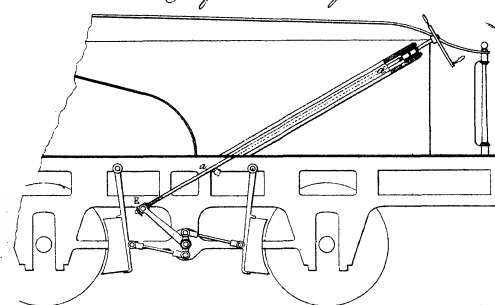


Fig. 13. *Stelmani's lower brake with single block.*

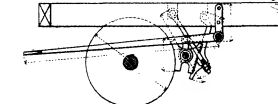


Fig. 17. *Courasse's brake*

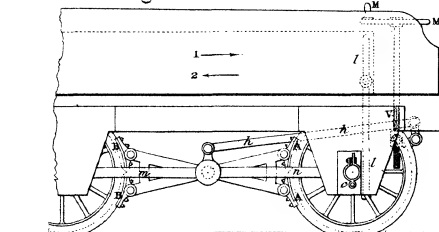


Fig. 15.

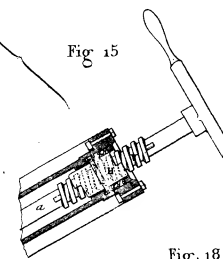


Fig. 18. *Tender with 6 wheels, Lyons line.*

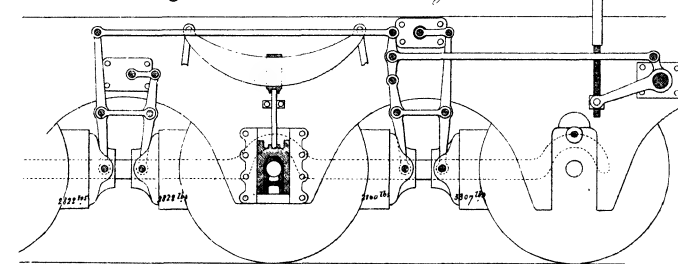
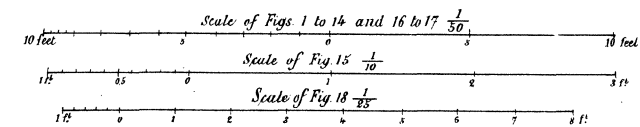
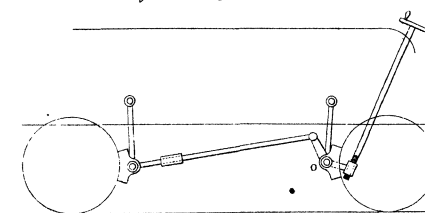


Fig. 16.

*Tender of the Lybre line.*





Tender (Western of France). (Figs. 1 to 6.)

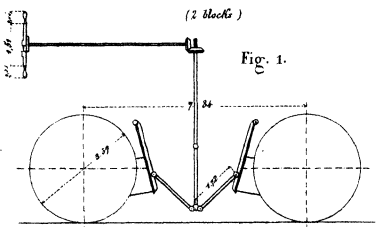


Fig. 1.

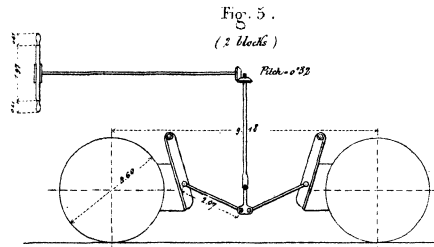


Fig. 5.

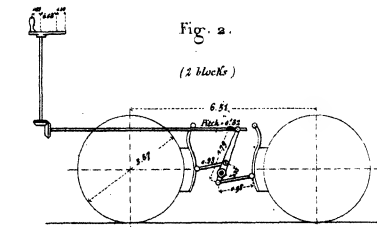


Fig. 2.

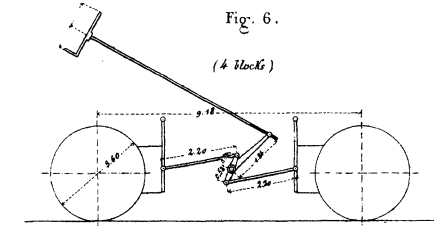


Fig. 6.

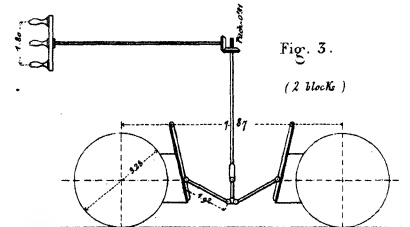


Fig. 3.

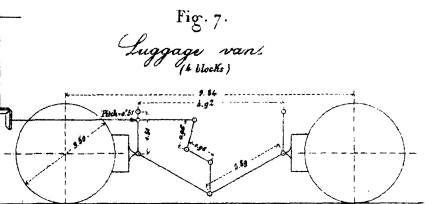


Fig. 7.

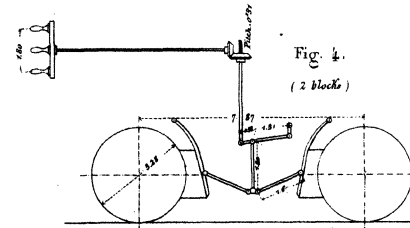


Fig. 4.

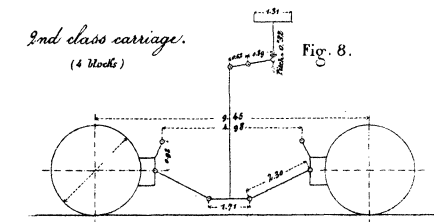


Fig. 8.

Scale of Figs. 1 to 8, 1/16 inch = 1 foot

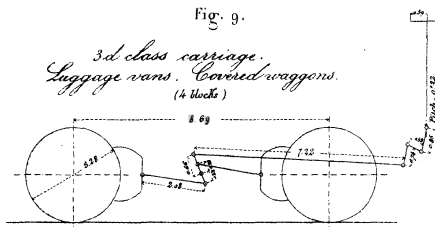


Fig. 9.

3d class carriage. Luggage vans. Covered waggons. (4 blocks)

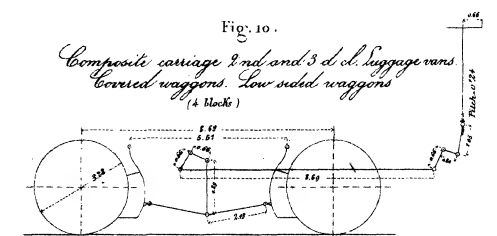


Fig. 10.

Composite carriage 2nd and 3d cl. Luggage vans. Covered waggons. Low sidd waggons (4 blocks)

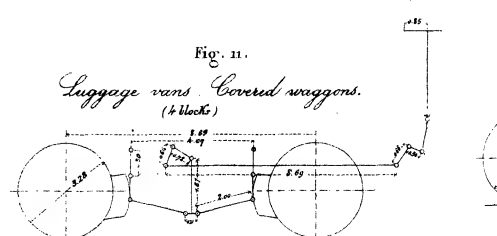


Fig. 11.

Luggage vans Covered waggons. (4 blocks)

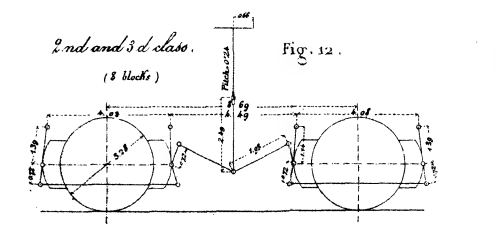


Fig. 12.

2nd and 3d class. (8 blocks)

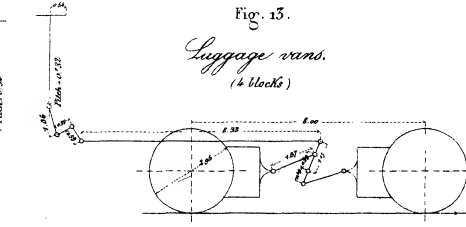


Fig. 13.

Luggage vans. (4 blocks)

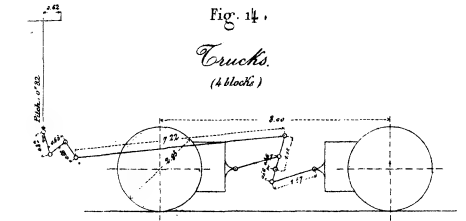


Fig. 14.

Trucks. (4 blocks)

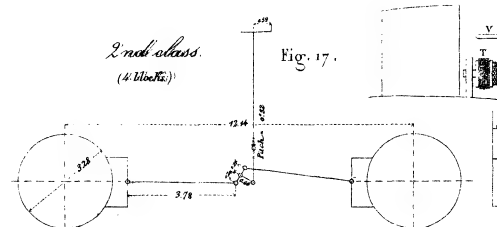


Fig. 17.

2nd class. (4 blocks)

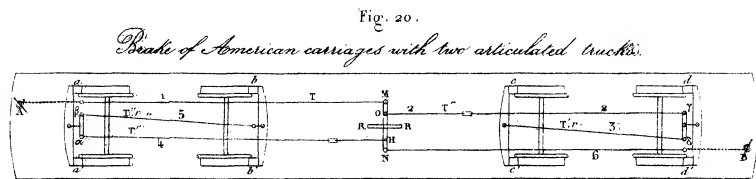


Fig. 20.

Brake of American carriages with two articulated trucks.

Scale of Figs. 10 and 17, 1/32 inch = 1 foot

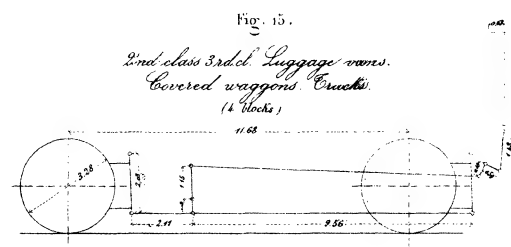


Fig. 15.

2nd class 3rd cl. Luggage vans. Covered waggons Trucks. (4 blocks)

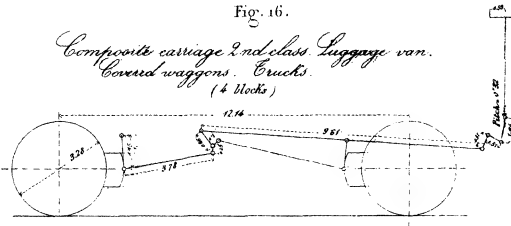


Fig. 16.

Composite carriage 2nd class Luggage van. Covered waggons. Trucks. (4 blocks)

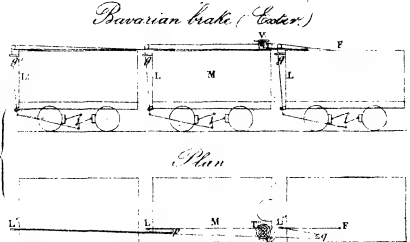


Fig. 19.

Prussian brake (top)

Fig. 18.

Plan

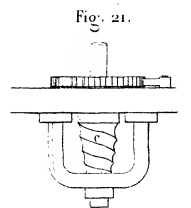
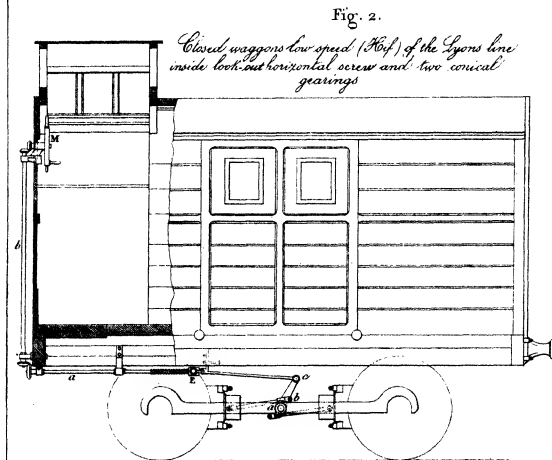
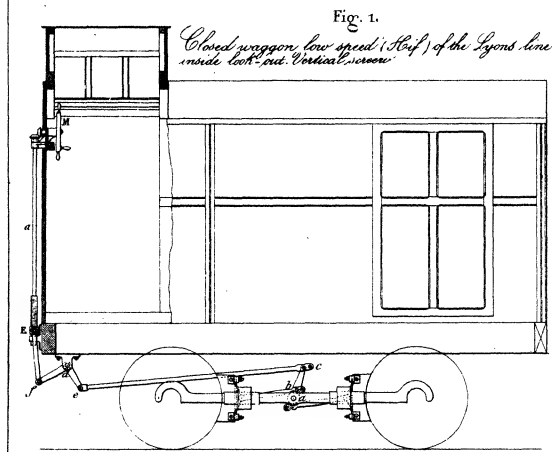


Fig. 21.



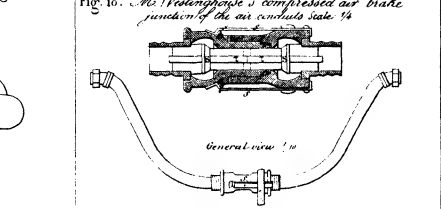
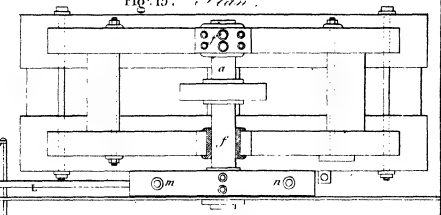
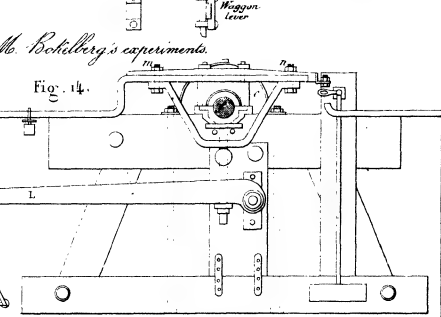
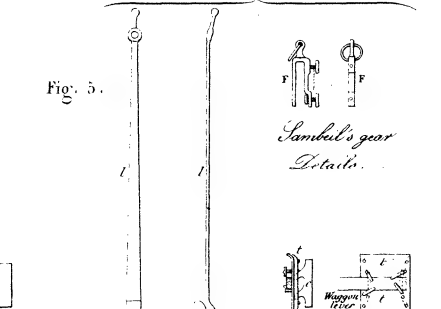
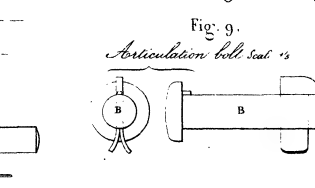
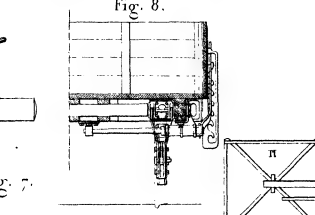
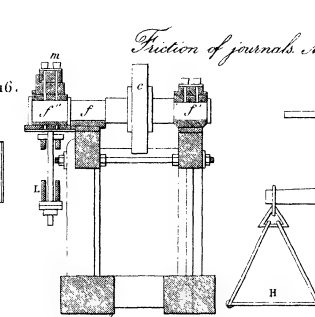
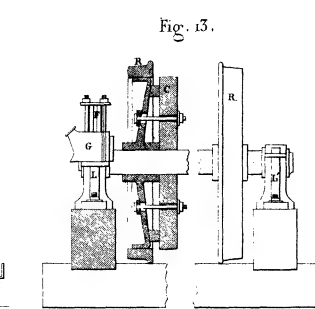
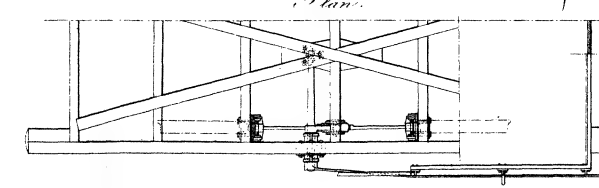
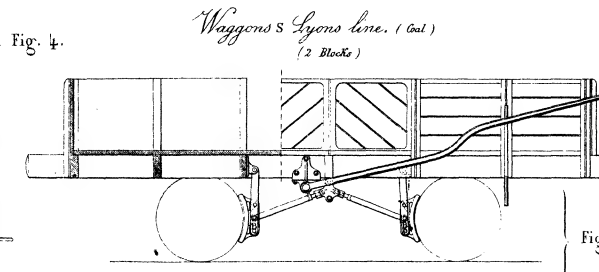
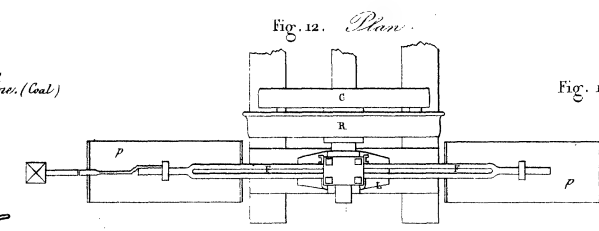
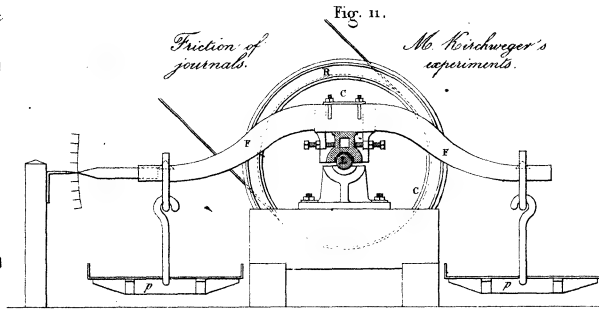
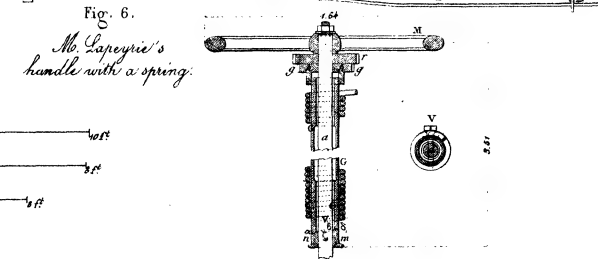
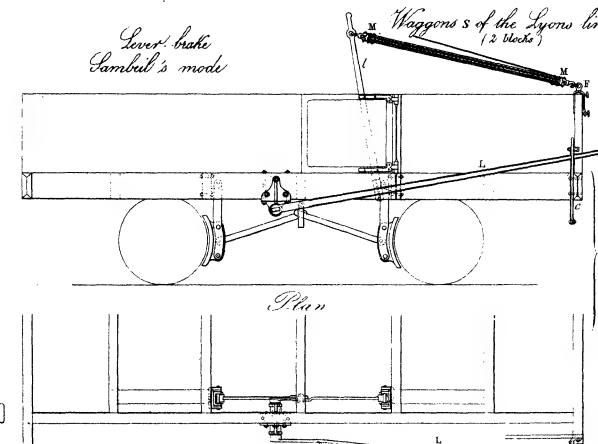
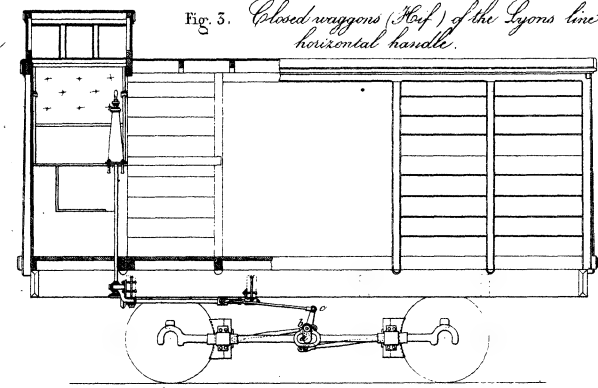


Scale of Figs. 1 to 4 and 7 and 8 1/40

Scale of Figs. 6 and 10 1/40

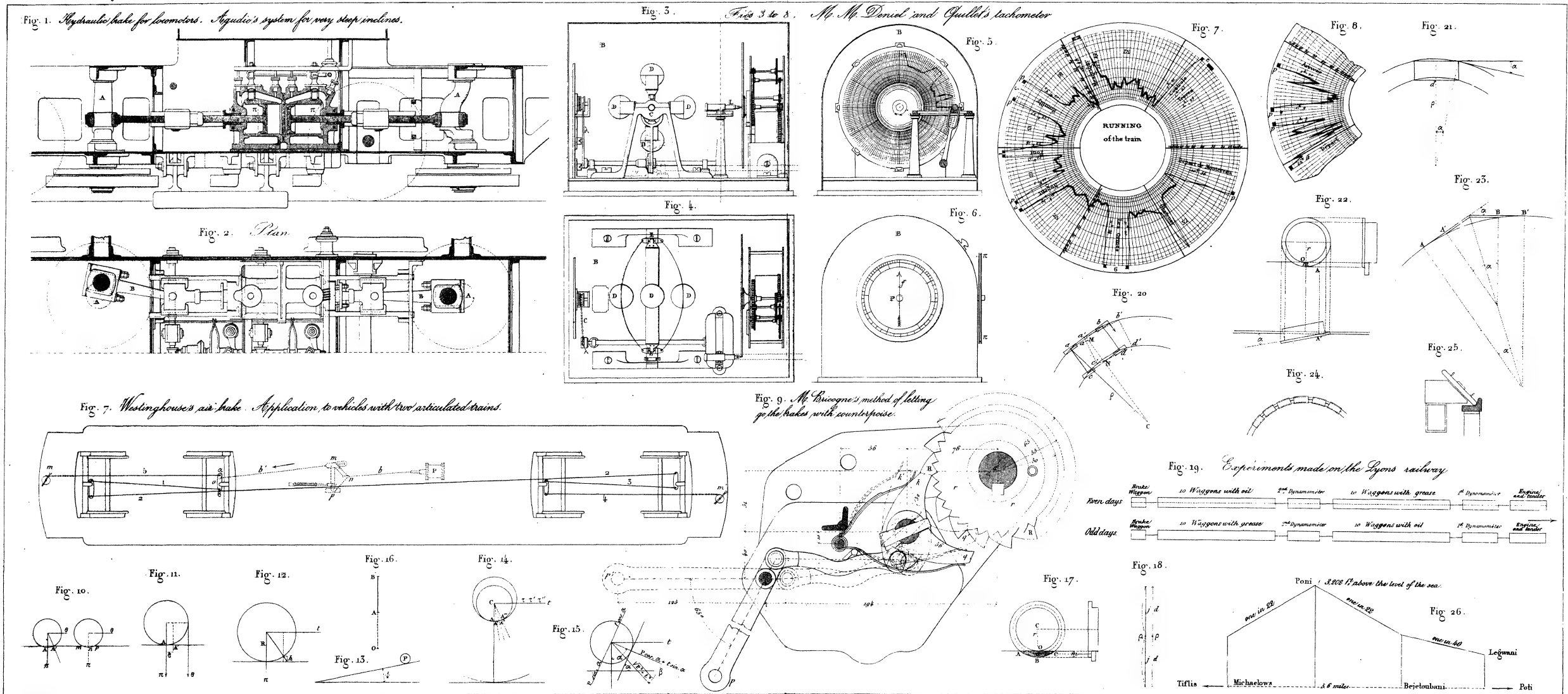
Scale of Figs. 5 and 11 to 13 1/25

Scale of Fig. 14 1/40

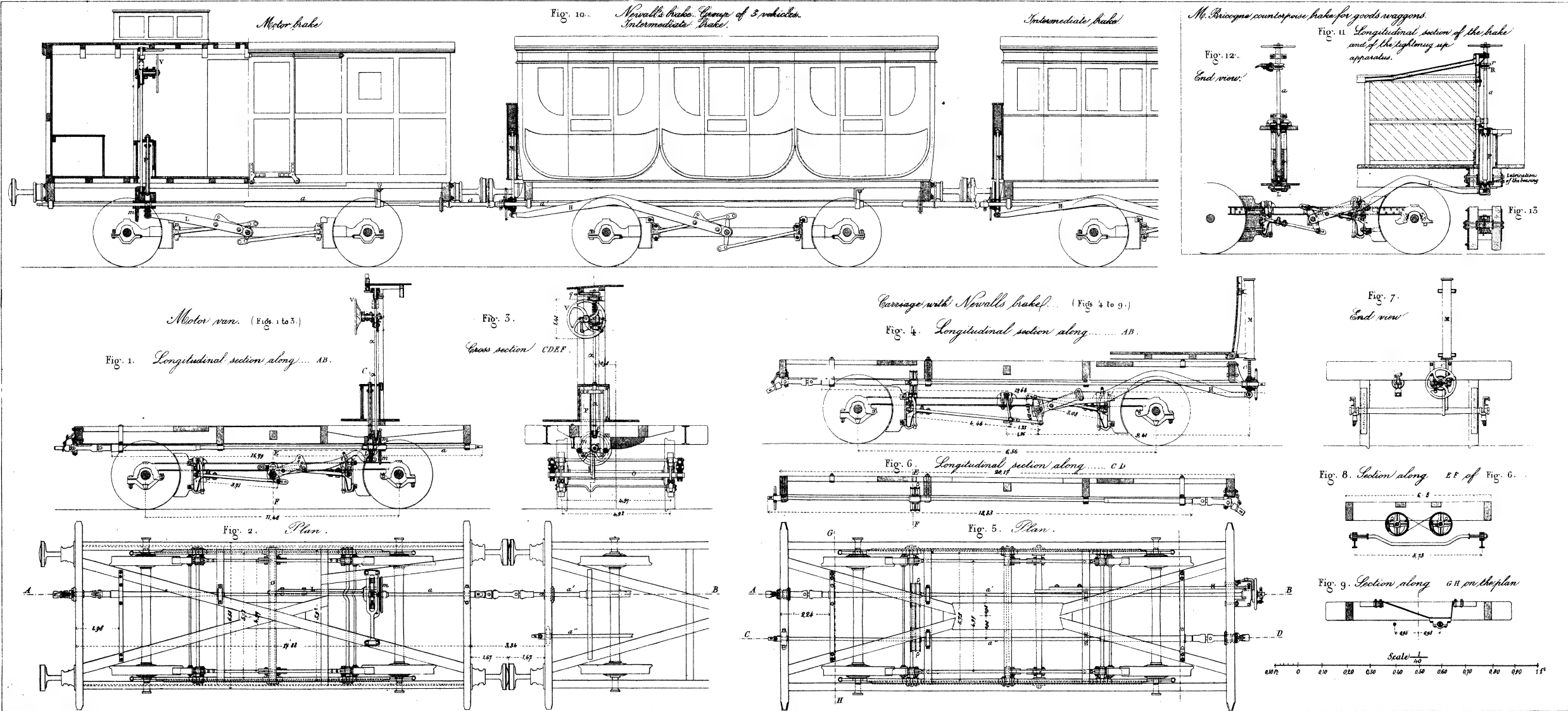








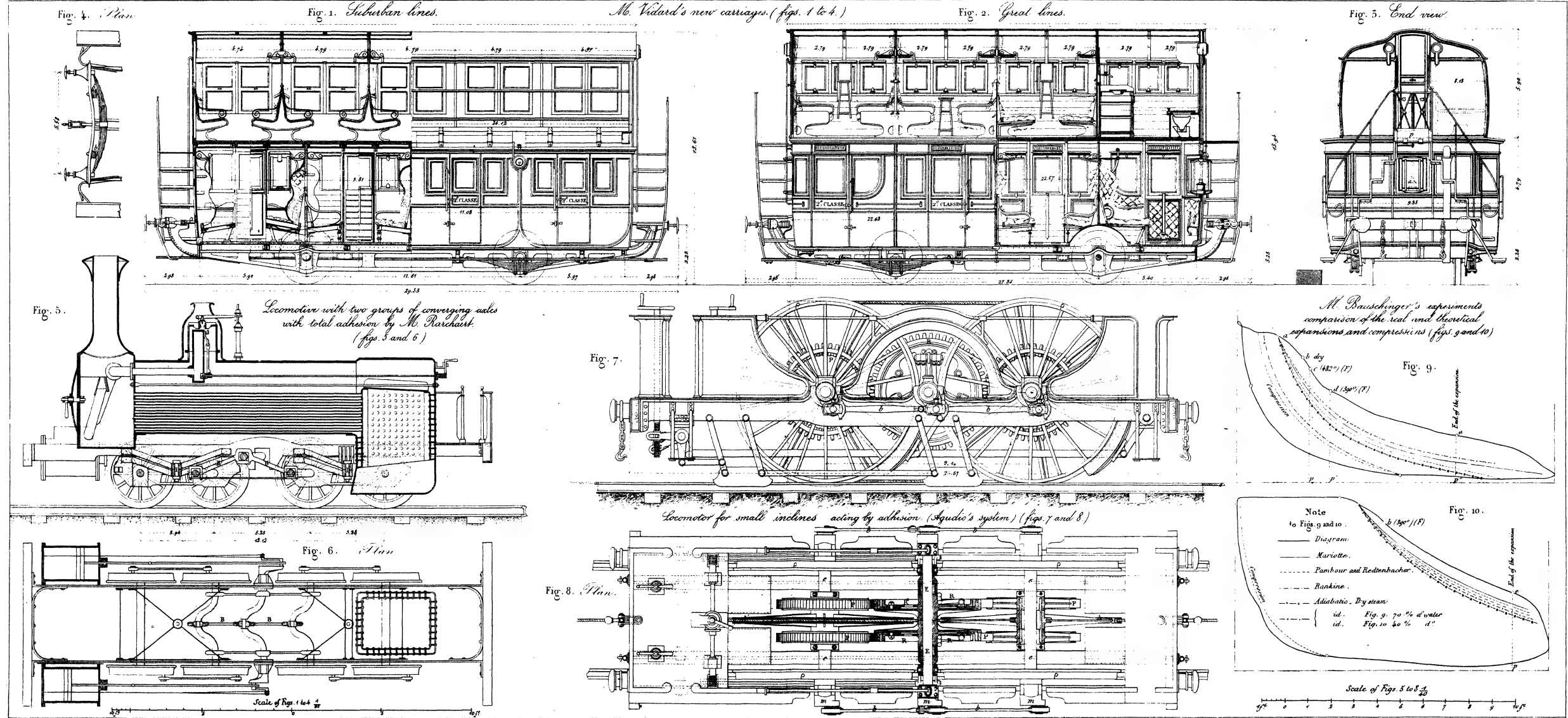






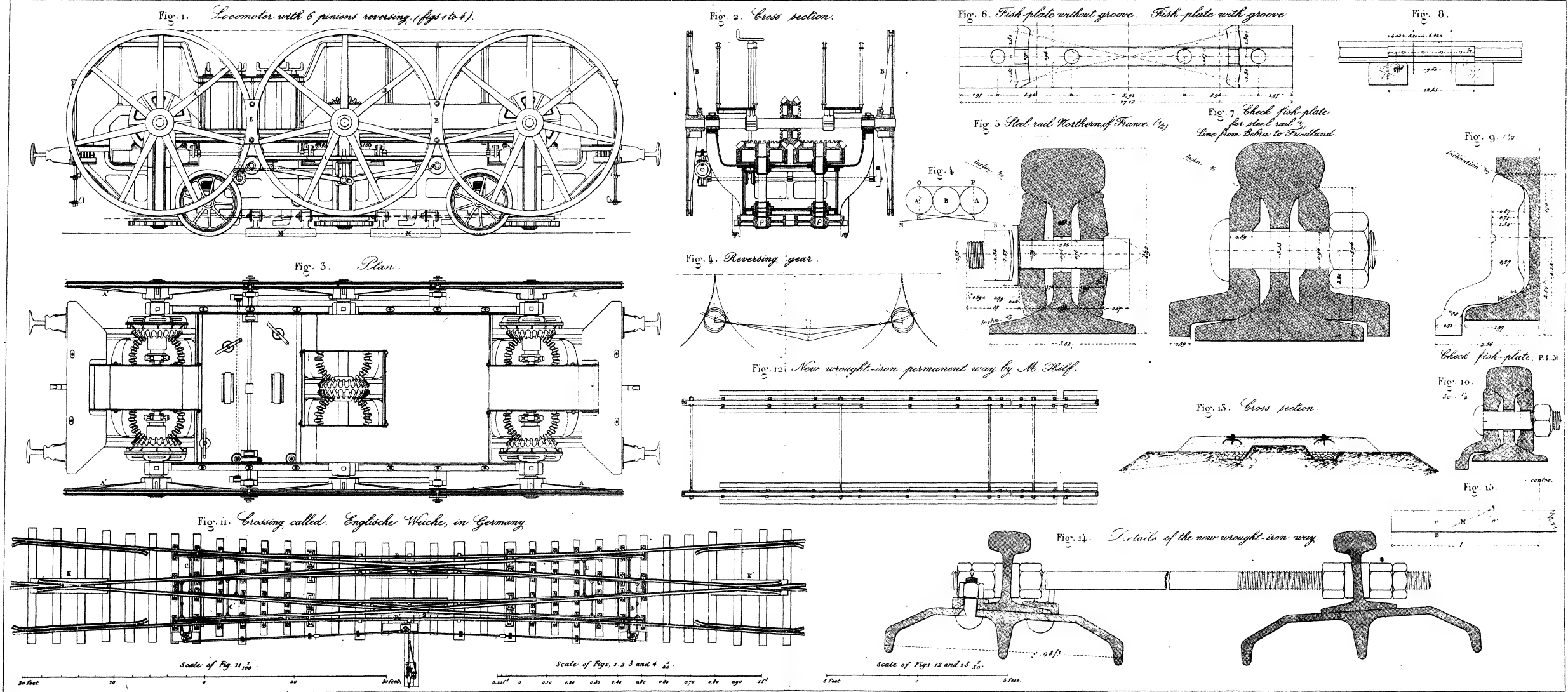






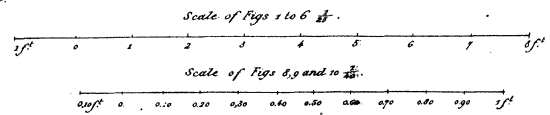
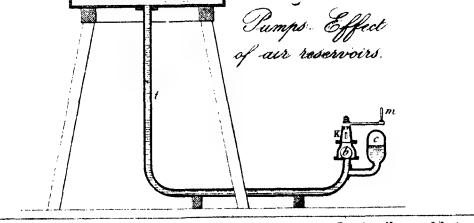
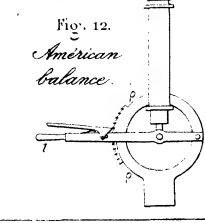
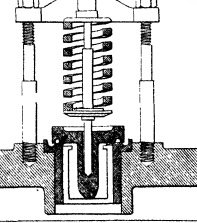
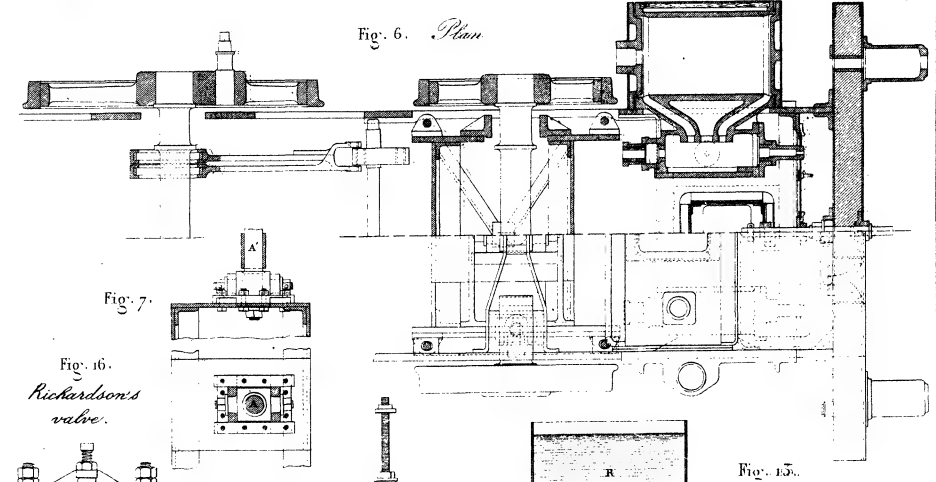
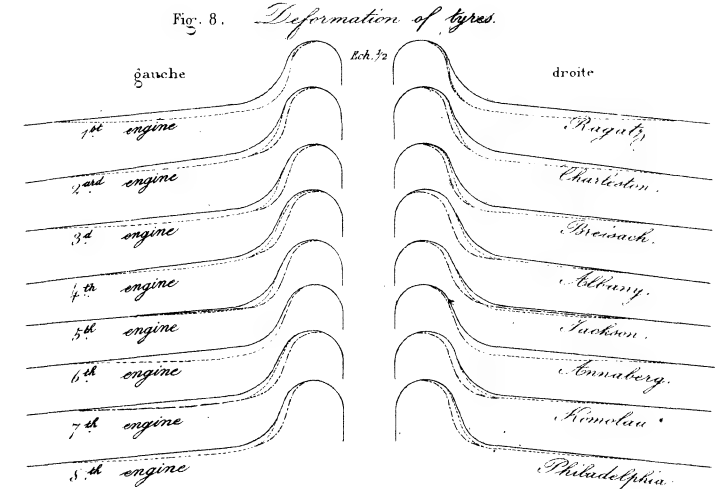
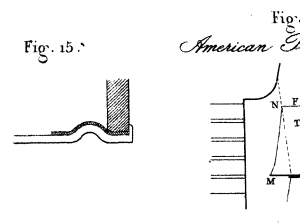
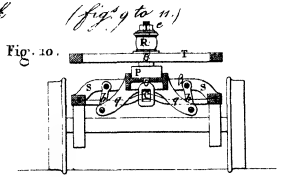
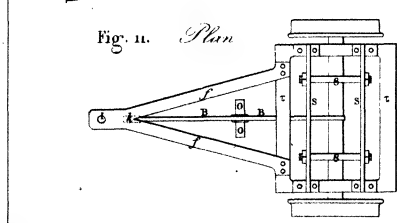
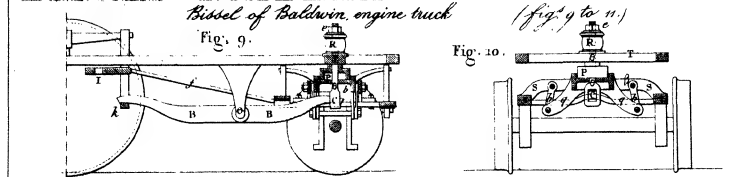
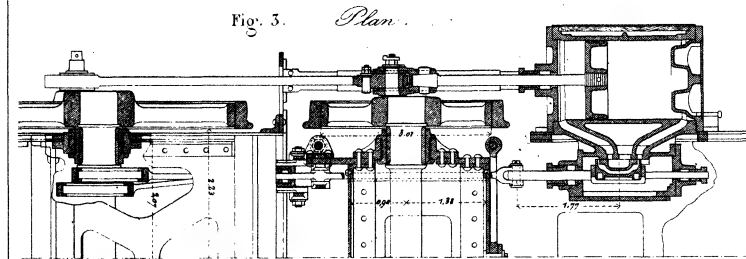
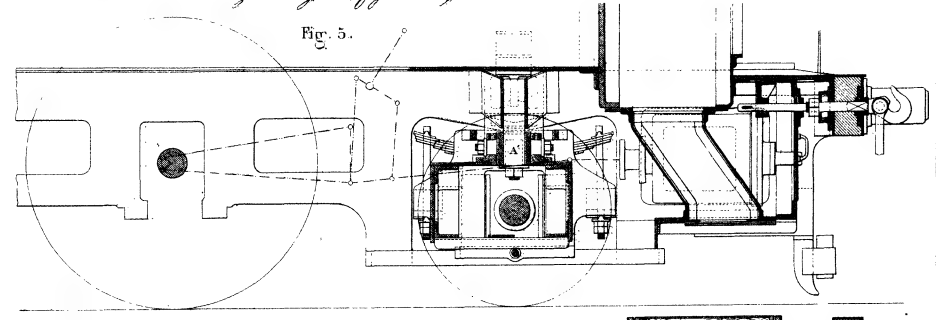
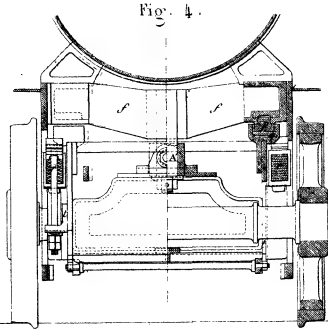
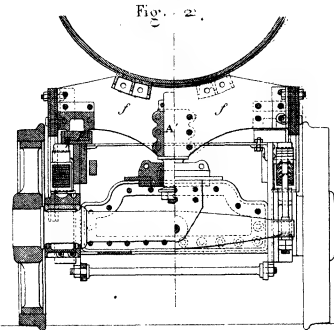
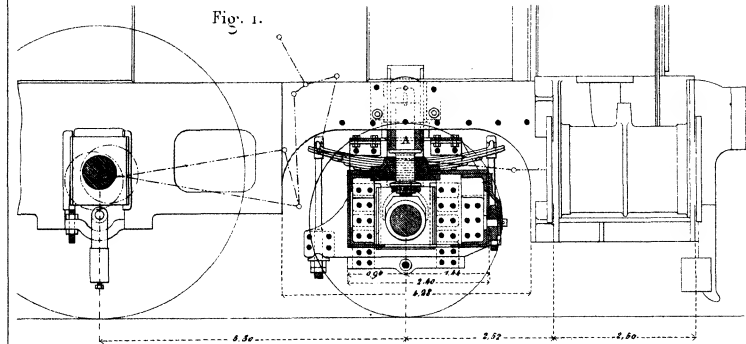








Curves. — *M. Novotny's engine. — Articulated leading truck with single axle and central turning pin. (figs 1 to 7)*  
*Passenger-engine. (figs 4 to 6)*





Heating carriages by the circulation of hot air (eastern of France. (figs 1 to 6.)

Scale of Figs 1 to 4 and 7 to 10  
0 100 200 300 400 500 600 700 800 900 1000

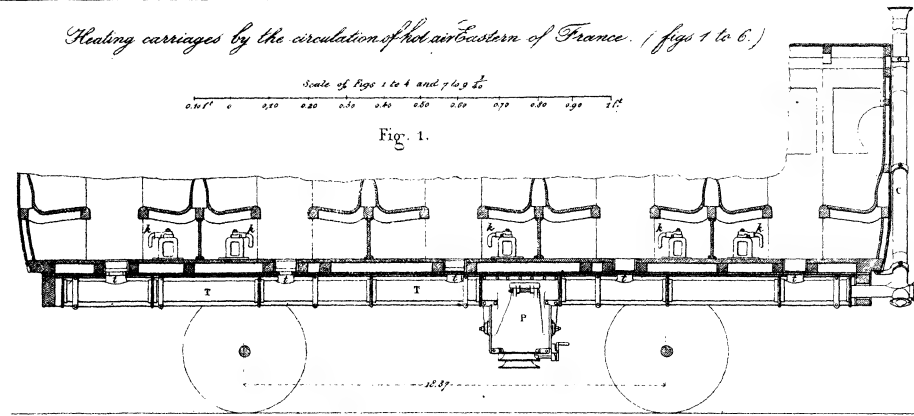


Fig. 1.

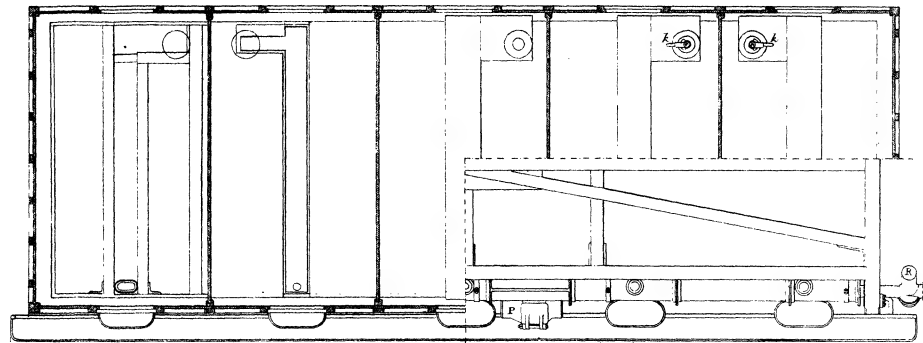


Fig. 2.

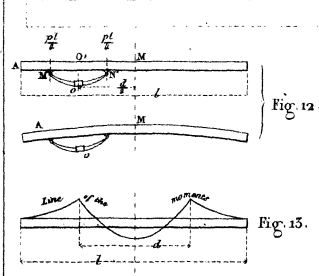


Fig. 12.

Fig. 13.

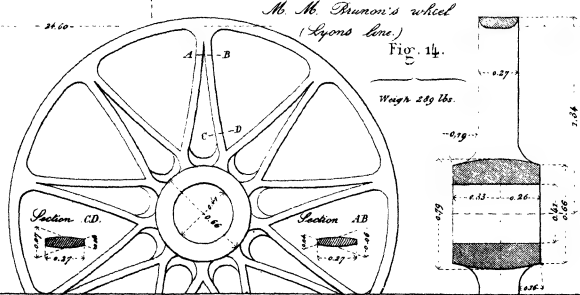


Fig. 14.

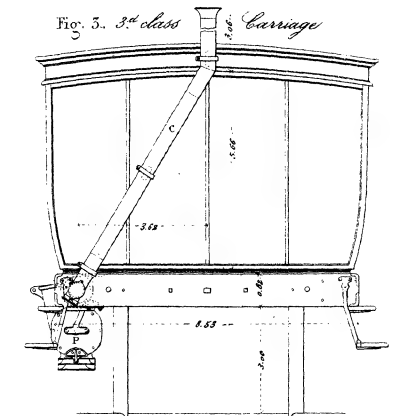


Fig. 3. 3<sup>rd</sup> class Carriage

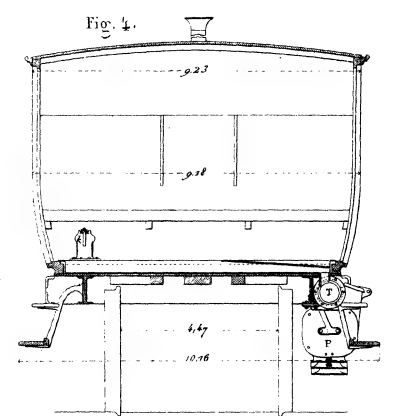
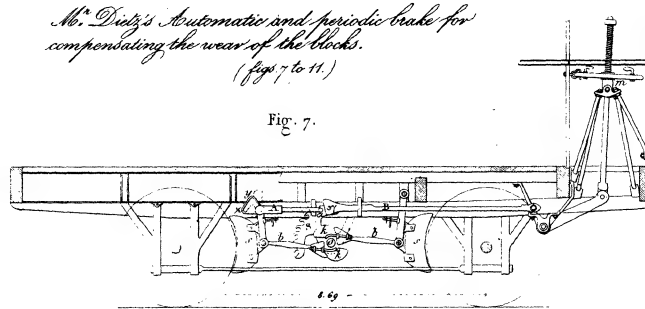


Fig. 4.



M. Ditz's Automatic and periodic brake for compensating the wear of the blocks. (figs 7 to 11.)

Fig. 7.

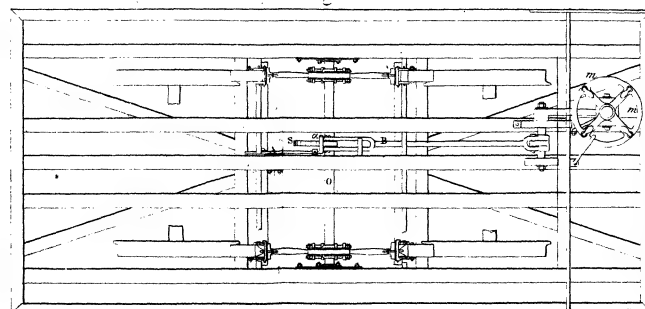


Fig. 8.

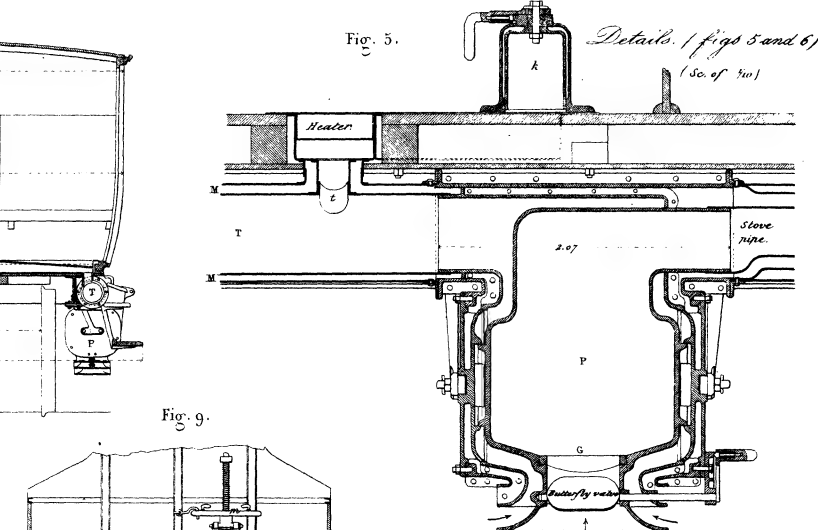


Fig. 5. Details. (figs 5 and 6) (Scale of 1/20)

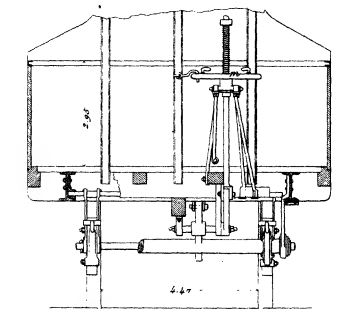


Fig. 9.

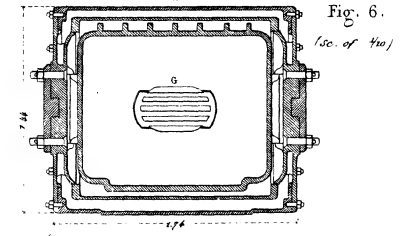


Fig. 6. (Scale of 1/20)

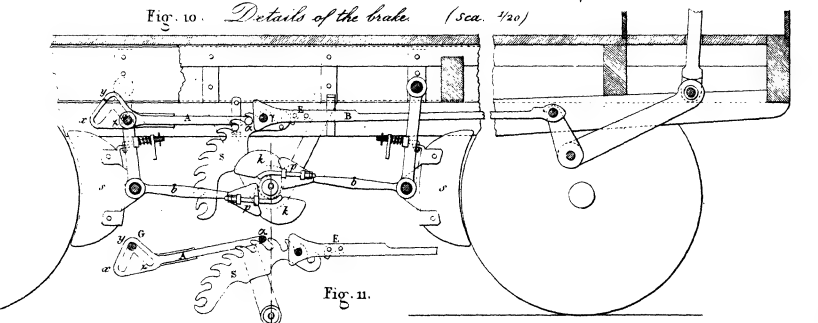


Fig. 10. Details of the brake. (Scale 1/20)

Fig. 11.

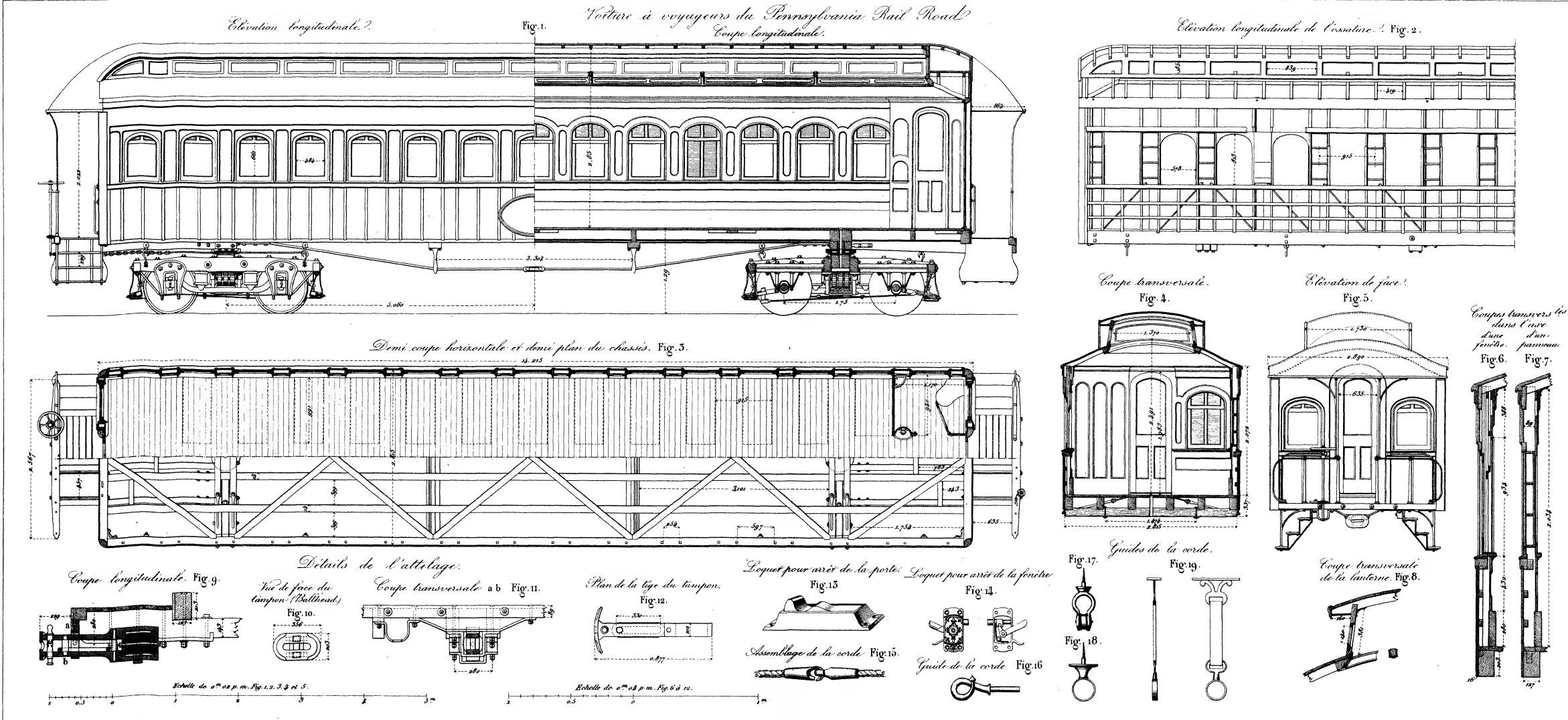






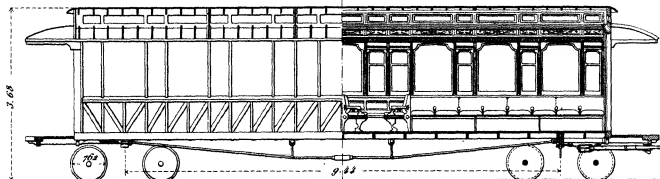


VOITURES A VOYAGEURS.

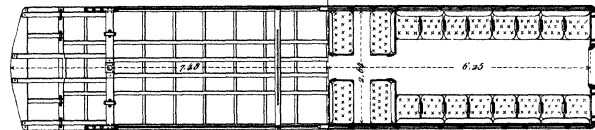




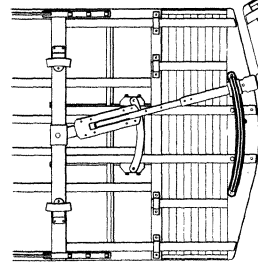
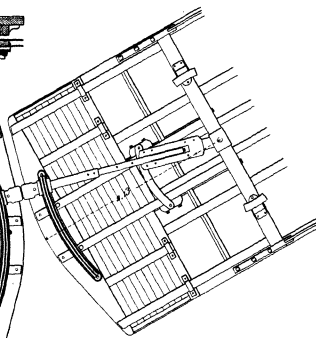
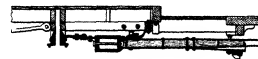
Voiture du chemin de fer aérien de New-York.  
Élévation de l'ossature. Fig. 1. Coupe longitudinale.



Plan du châssis. Fig. 2. Plan des sièges

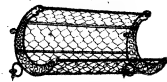


Coupe longitudinale Fig. 3. Plan par dessous Fig. 4.

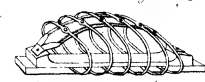


Sièges à ressorts elliptiques. Syst. Collé

Filés pour bagage. Fig. 11.



Une traverse du siège Fig. 12.



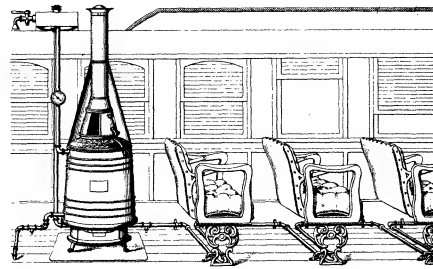
Vue perspective. Fig. 13.



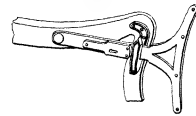
Échelle de 0<sup>m</sup> 01 p. m. Fig. 1, 2, et 10

Échelle de 0<sup>m</sup> 02 p. m. Fig. 3, 4, 11 et 13

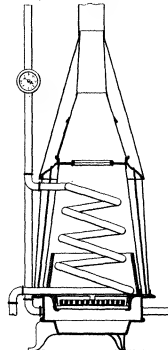
Chauffage système Baker Fig. 5.



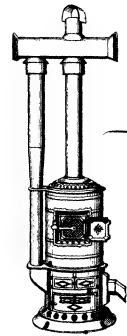
Passer reversible des sièges. Fig. 7.



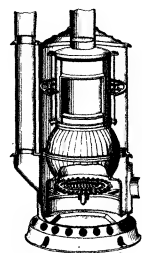
Coupe du poêle Baker. Fig. 6.



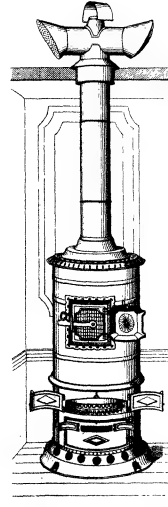
Poêle à ventilation système Sparrs Fig. 8.



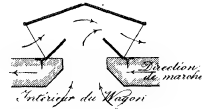
Coupe Fig. 9.



Poêle ordinaire Syst. Spiers Fig. 10.



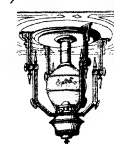
Ventilation par aspiration Fig. 14.



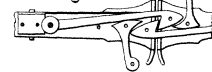
Ventilation automatique par aspiration. Fig. 15.



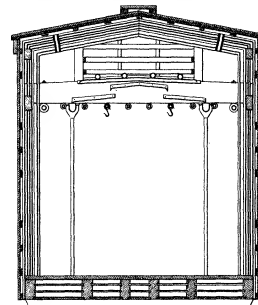
Lampe centrale Fig. 16.



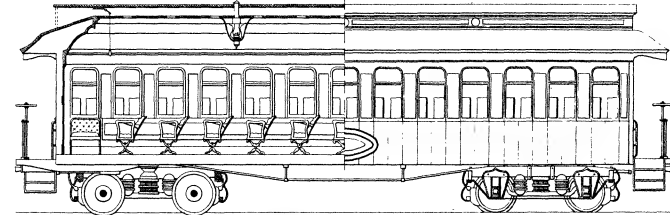
Plan de l'attelage M. S. Webb Fig. 26.



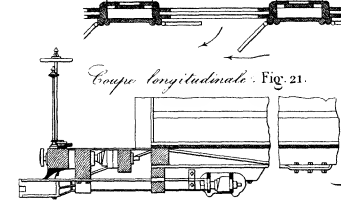
Wagon réfrigérant Syst. Coffey. Coupe transversale. Fig. 17.



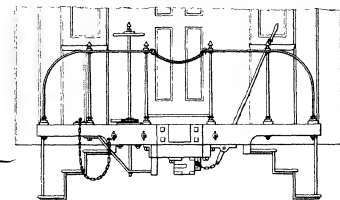
Voiture à voyageurs avec ventilation système Windstille. Coupe longitudinale. Fig. 18. Élévation



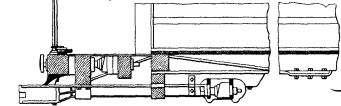
Coupe par une fenêtre avec déflecteur Windstille. Intérieur du Wagon - Direction de marche. Fig. 19.



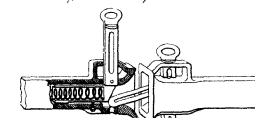
Attelage et plateforme Miller. Vue de face. Fig. 20.



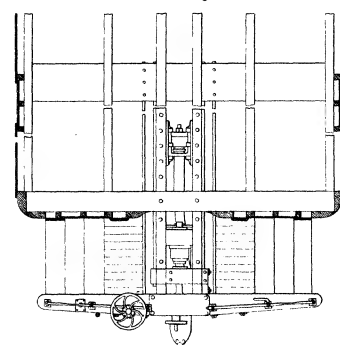
Coupe longitudinale. Fig. 21.



Attelage Whiteford Fig. 23.



Plan Fig. 22.



Attelage M. S. Webb Fig. 24.

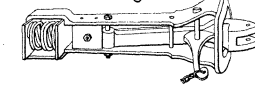
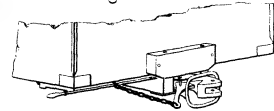


Fig. 25.



Échelle de 0<sup>m</sup> 025 p. m. Fig. 5, 8, 20 et 22.

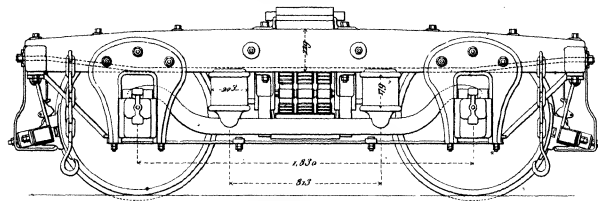
Échelle de 0<sup>m</sup> 04 p. m. Fig. 6, 9, 10, 11, 13, 16 et 23 à 26

Échelle de 0<sup>m</sup> 10 p. m. Fig. 7, 21, 24 et 25.

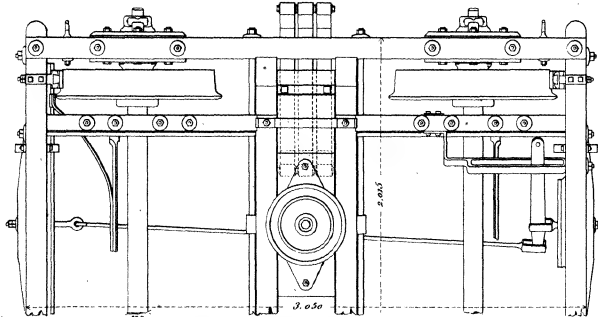


TRUCKS DE VOITURES A VOYAGEURS.

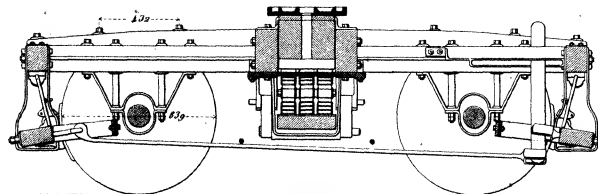
Truck à quatre roues d'un Wagon à voyageurs du Pennsylvania R.R.  
Elevation. Fig. 1.



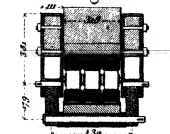
Plan. Fig. 4.



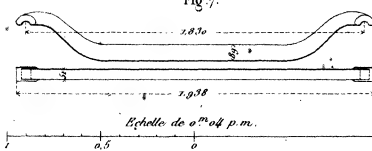
Coupe longitudinale. Fig. 5.



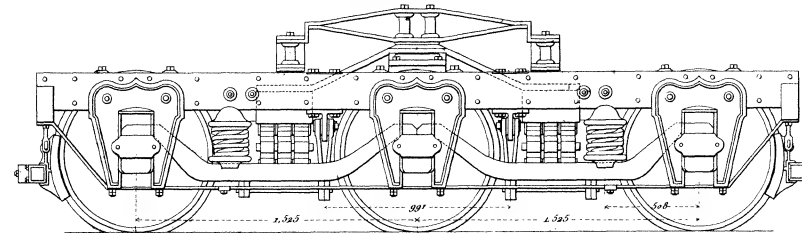
Coupe à travers le ressort elliptique.  
Fig. 6.



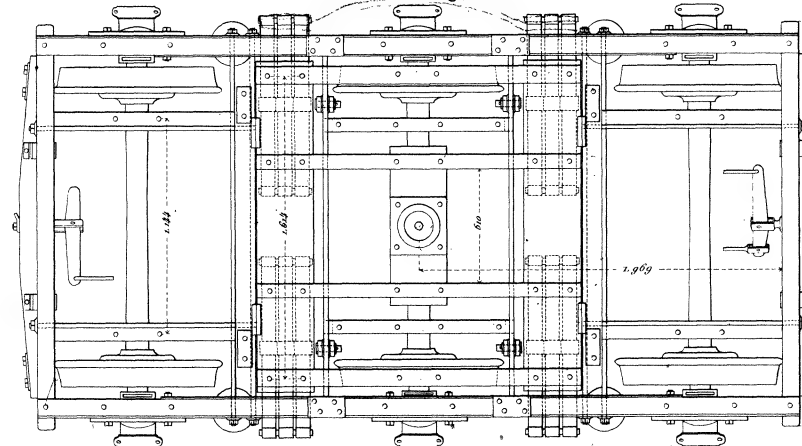
Balançoire répartissant les charges.  
Fig. 7.



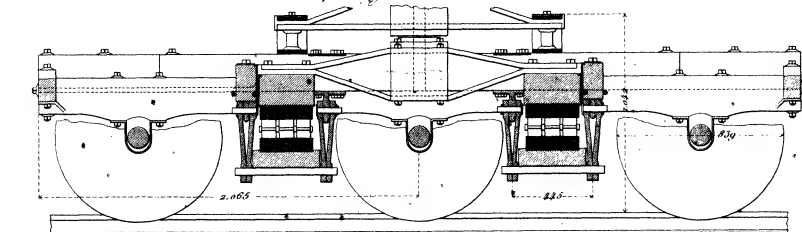
Truck à six roues d'un Wagon à lits du Louisville et Nashville Rail Road.  
Elevation. Fig. 8.



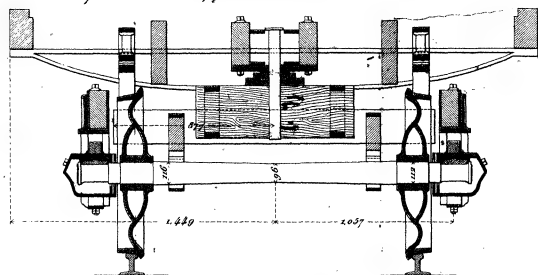
Plan. Fig. 11.



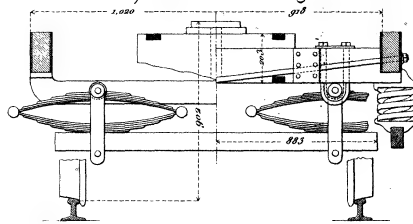
Coupe longitudinale. Fig. 12.



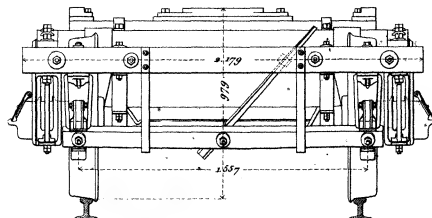
Coupe transversale par l'axe de l'essieu central. Fig. 9.



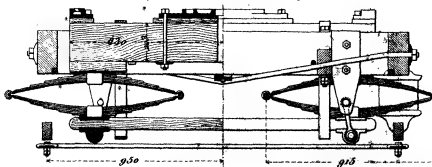
Coups transversales. Fig. 10.



Vue de face. Fig. 2.

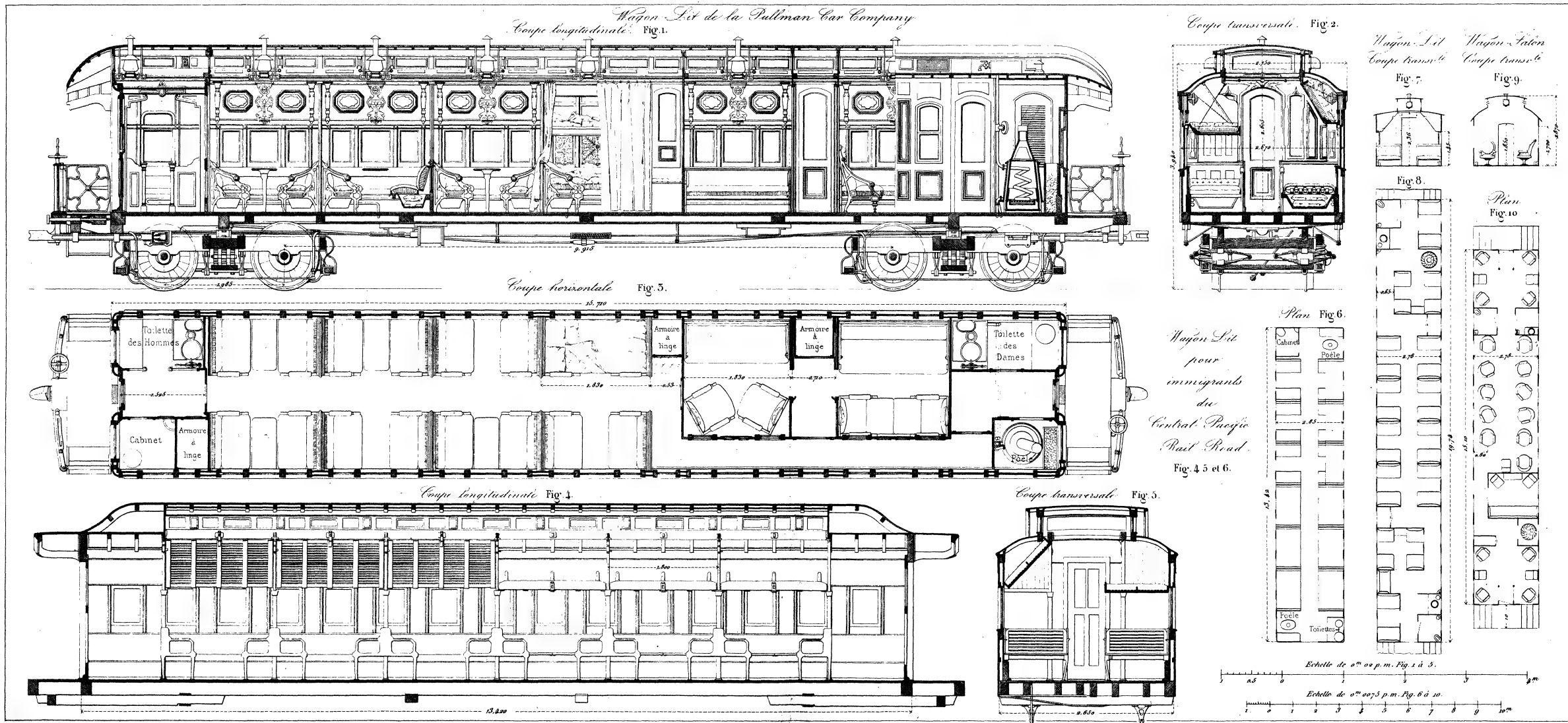


Coupe transversale. Fig. 3.





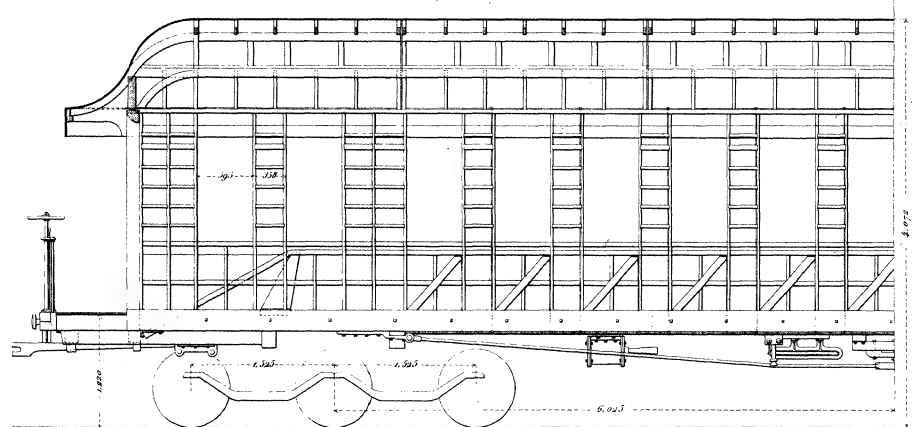
WAGONS-LITS ET WAGON-SALON.



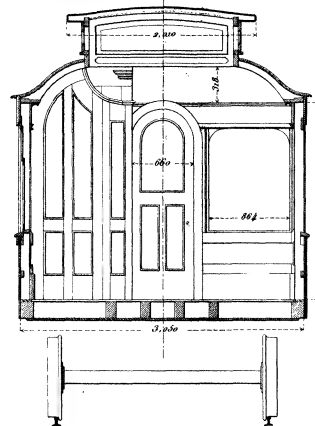




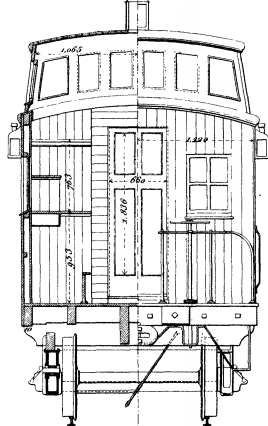
Voiture-Bureau du Louisville et Nashville Rail Road.  
Demi coupe longitudinale Fig. 1.



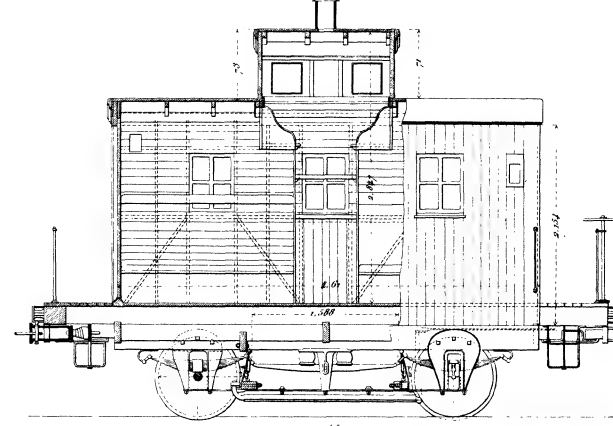
Coupe transversale Fig. 2.



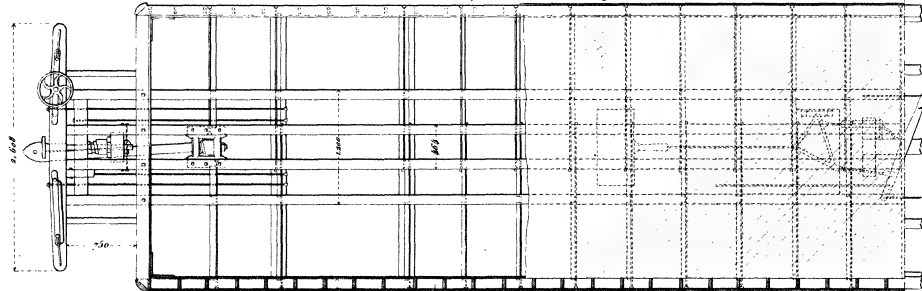
Voiture pour le personnel du train (Cokeless Car) du Pennsylvania R.R.  
Coupe transversale vue de face Fig. 9.



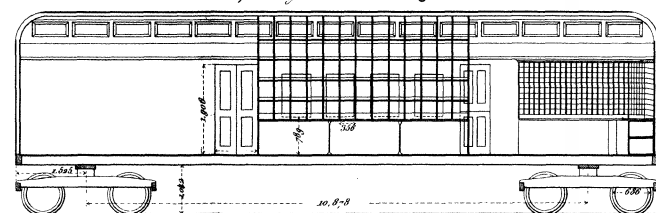
Voiture pour le personnel du train (Cokeless Car) du Pennsylvania R.R.  
Coupe longitudinale Fig. 8.



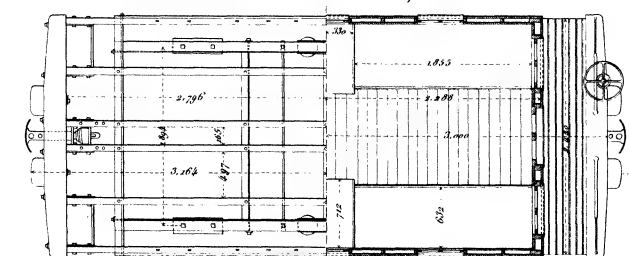
Demi plan du chassis Fig. 3.



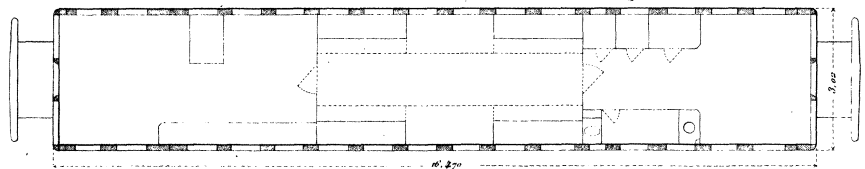
Voiture postale du Louisville et Nashville R.R.  
Coupe longitudinale Fig. 5.



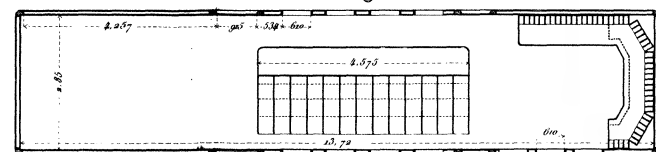
Plan du chassis Fig. 10.



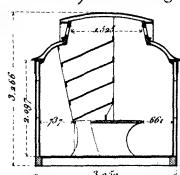
Distribution interne du wagon Bureau Fig. 4.



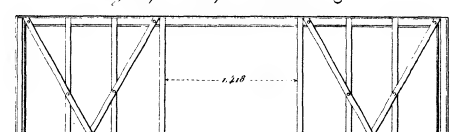
Plan Fig. 6.



Coupe transversale de la Voiture postale Fig. 7.



Demi plan du contreventement supérieur du wagon pour le personnel Fig. 11.



Echelle de 0<sup>m</sup>02 p. m. Fig. 1 à 7

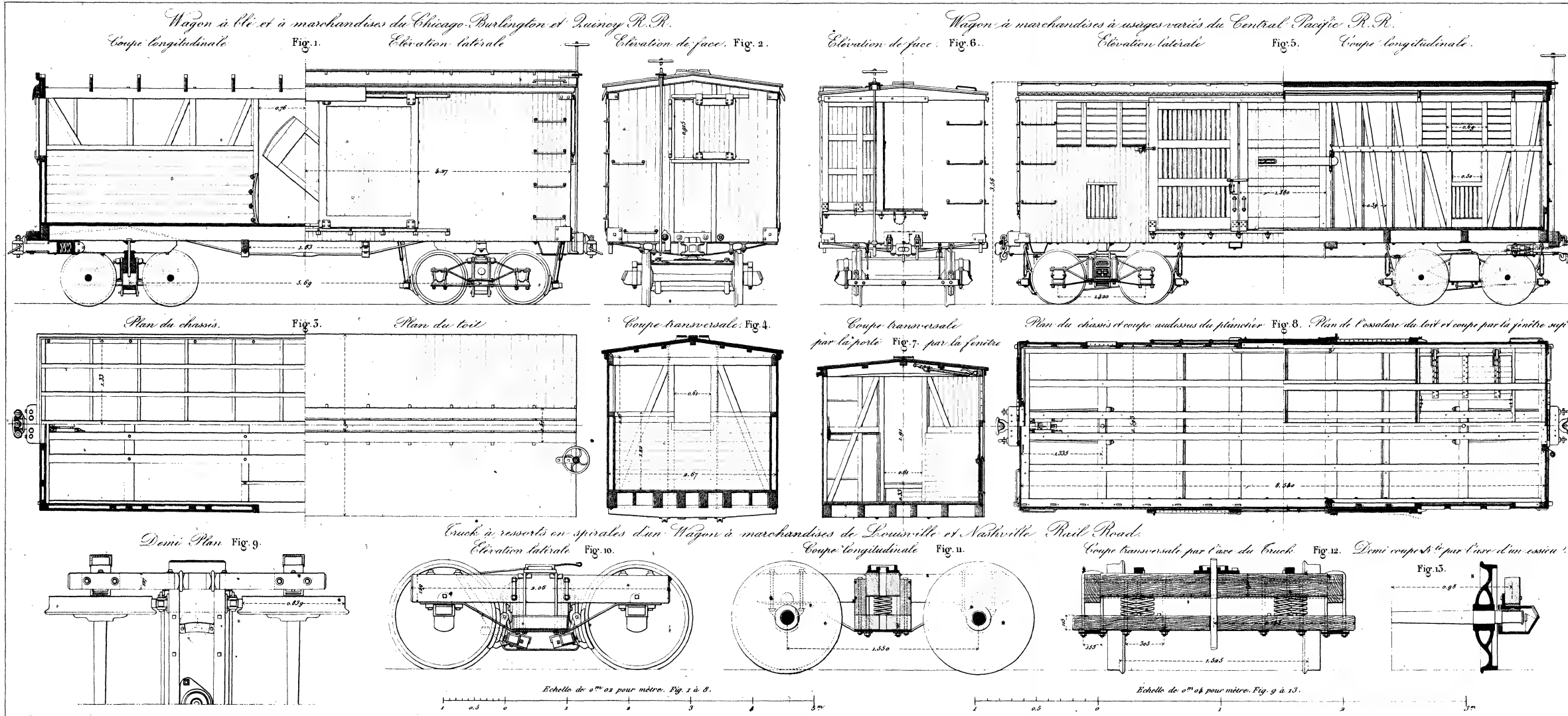


Echelle de 0<sup>m</sup>02 p. m. Fig. 8 à 11





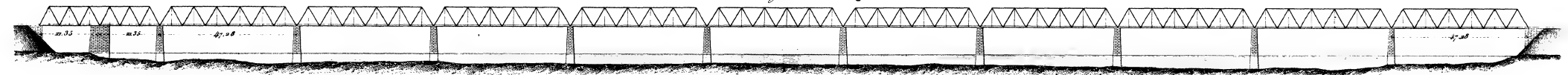
WAGONS COUVERTS A MARCHANDISES.



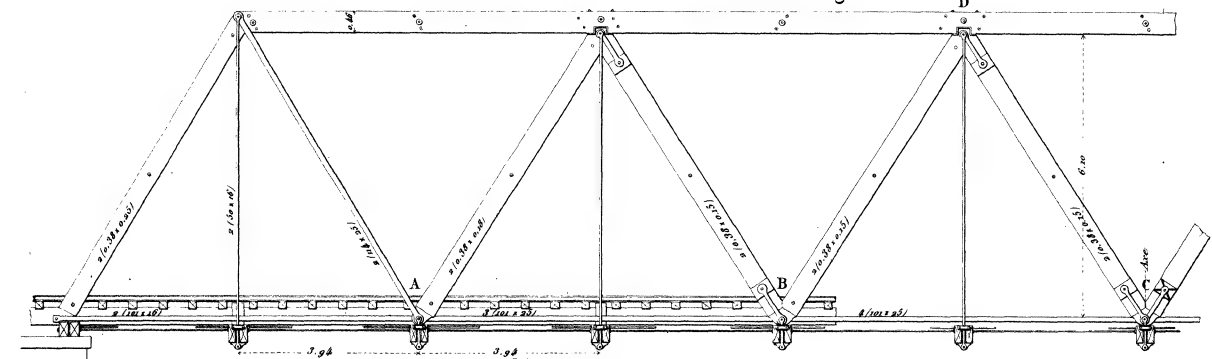


PONT DU SYSTÈME TRIANGULAIRE EN BOIS ET FER. SEMELLES EN FONTE.

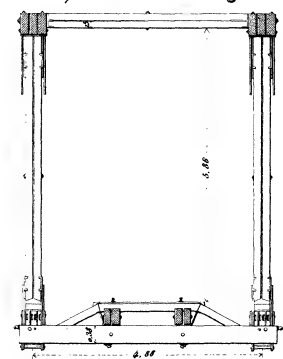
Pont sur le Tennessee à Decatur (Alabama) sur le Memphis et Charleston Rail-Road.  
Elevation générale. Fig. 1.



Elevation d'une demi-travée. Fig. 2.

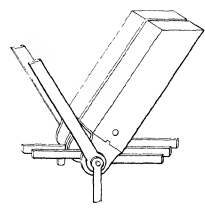


Coupe transversale. Fig. 3.

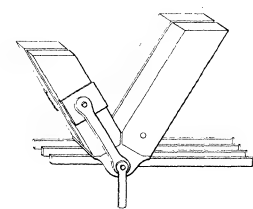


Détails d'assemblage avec la semelle inférieure

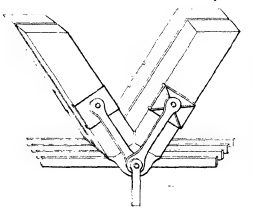
Articulation en A Fig. 6.



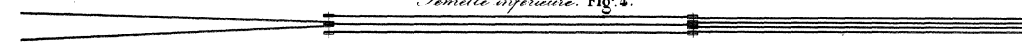
Articulation en B Fig. 7.



Articulation en C Fig. 8.



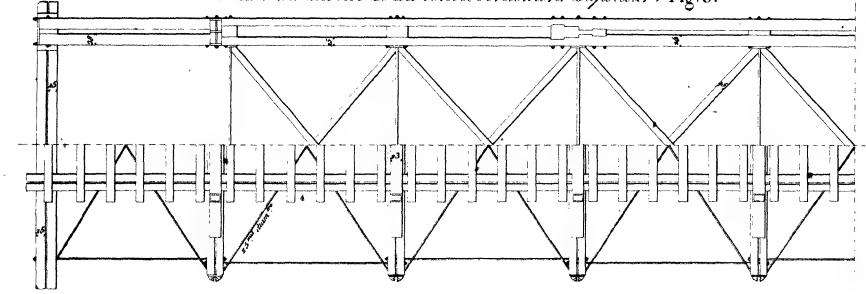
Semelle inférieure. Fig. 4.



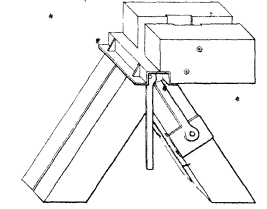
Détails de la semelle supérieure en fonte des Ponts du système Post  
Elevation et coupe verticale. Fig. 10.



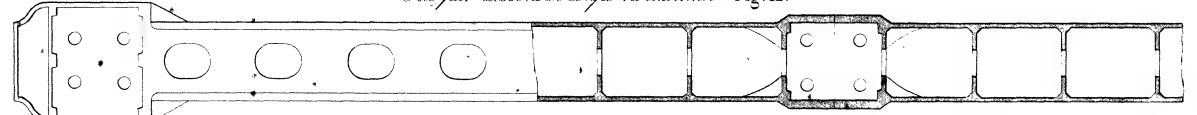
Plan du tablier et du contreventement supérieur. Fig. 5.



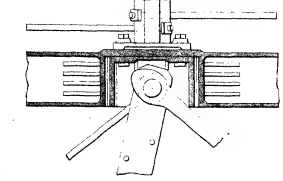
Assemblage avec la semelle supérieure en D.  
Fig. 9.



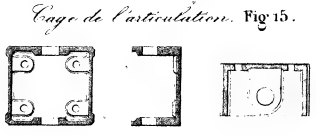
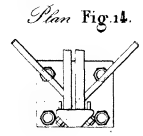
Vue par dessous et coupe horizontale. Fig. 12.



Coupe longitudinale. Fig. 13.

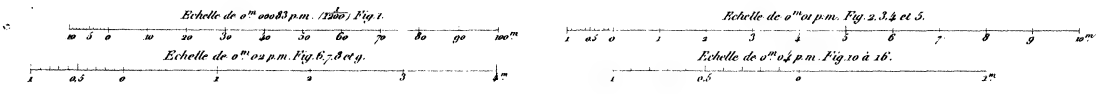
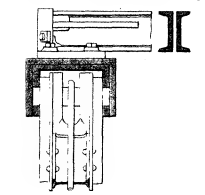


Attache des montants, tirants et contreventements.  
Plan Fig. 14.

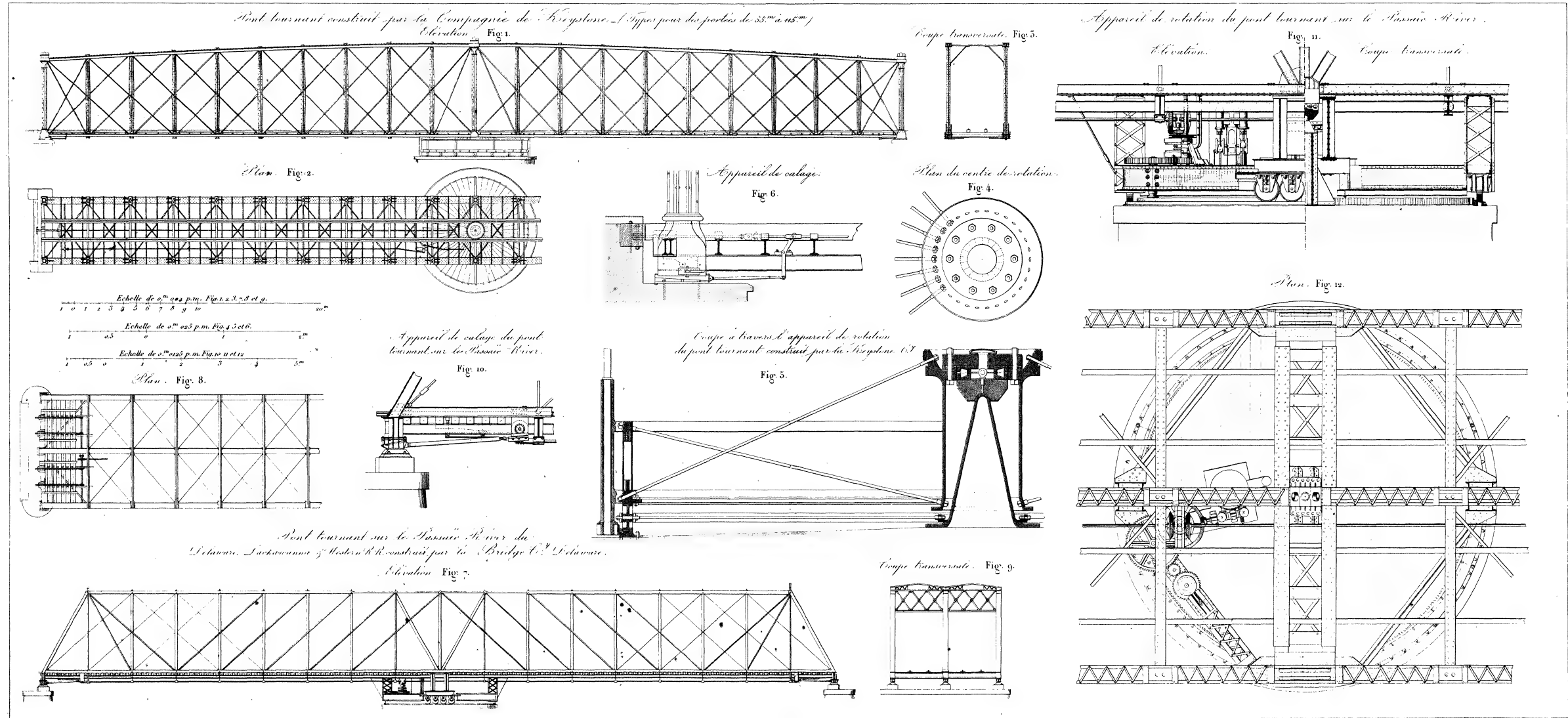


Cage de l'articulation. Fig. 15.

Coupe transversale. Fig. 16.



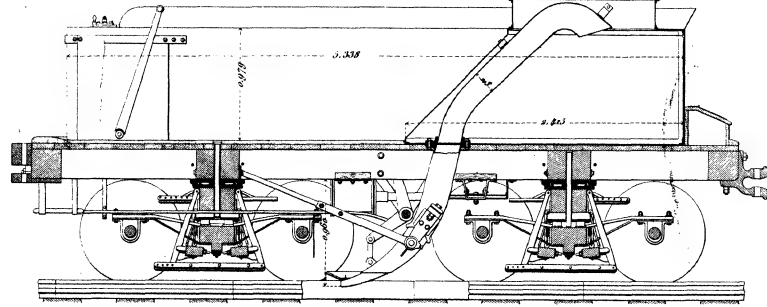




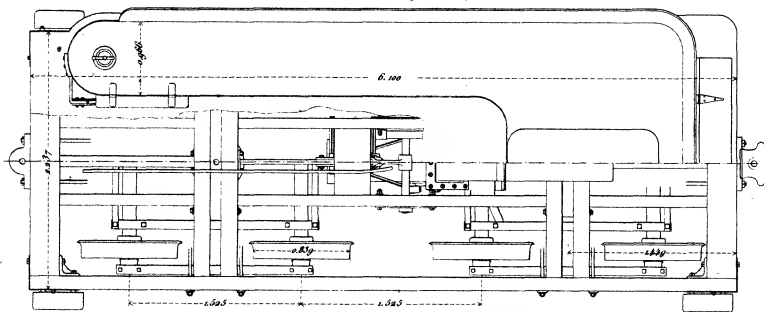




Tender pour Locomotives à grande vitesse (Système Ramsbottom) du Pennsylvania Rail Road  
Coupe longitudinale. Fig. 1.

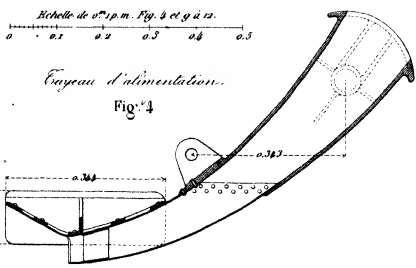


Plan. Fig. 3



Échelle de 0.10 m. Fig. 3 et 4.

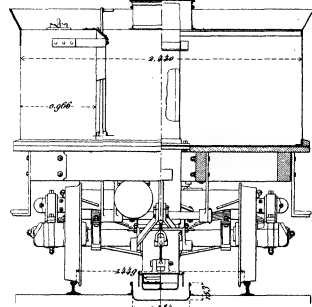
Échelle de 0.10 m. Fig. 3 et 4.



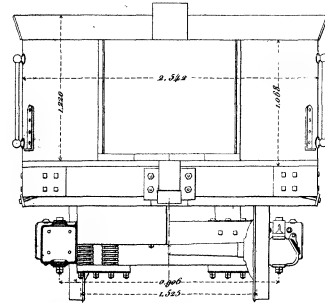
Échelle de 0.10 m. Fig. 3 à 5 et 12.

Imprimerie de DUNOD Quai des Augustins, N. 2.

Elevation. Fig. 2. Coupe

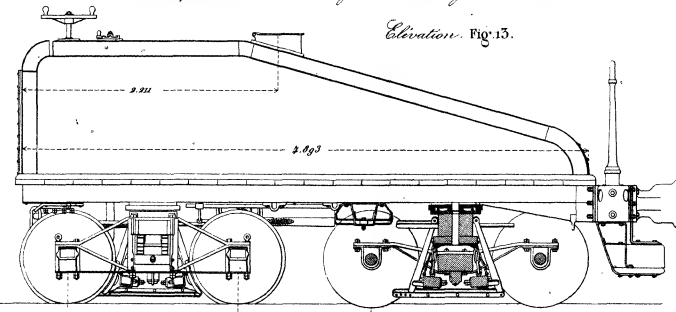


Vue de face. Fig. 5.

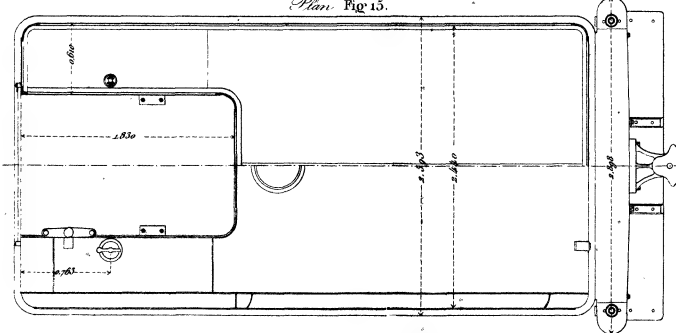


Tender pour locomotive de gare du Pennsylvania R.R.

Elevation. Fig. 13.

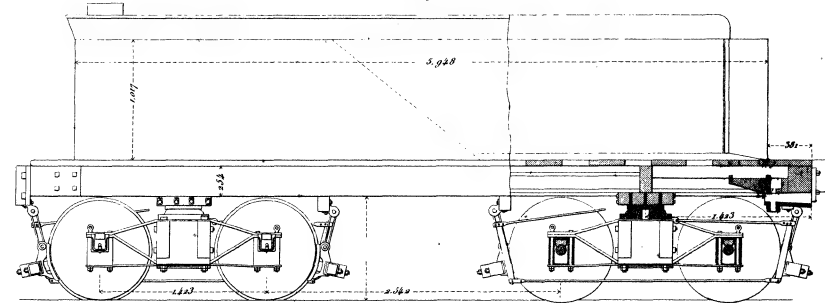


Plan. Fig. 15.

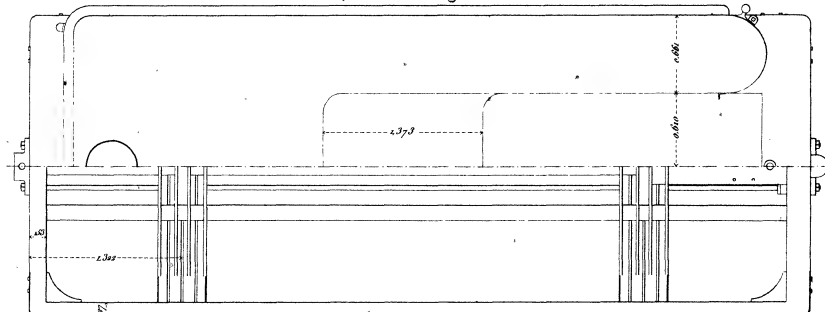


Tender pour Locomotives à marchandises de Louisville et Washville Rail Road.

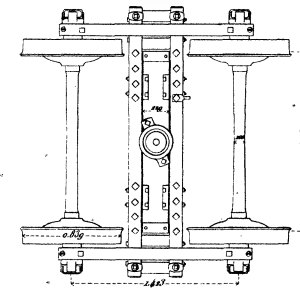
Elevation et coupe longitudinale. Fig. 6



Plan. Fig. 7.



Plan du truck. Fig. 8.



Détails de la soupape de mélange.

Fig. 9.

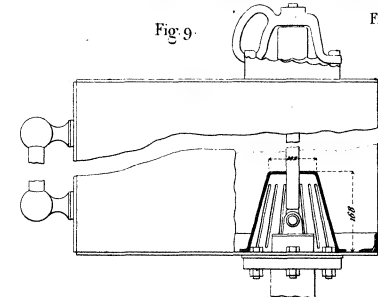


Fig. 10.

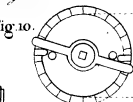


Fig. 11.

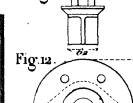
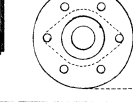
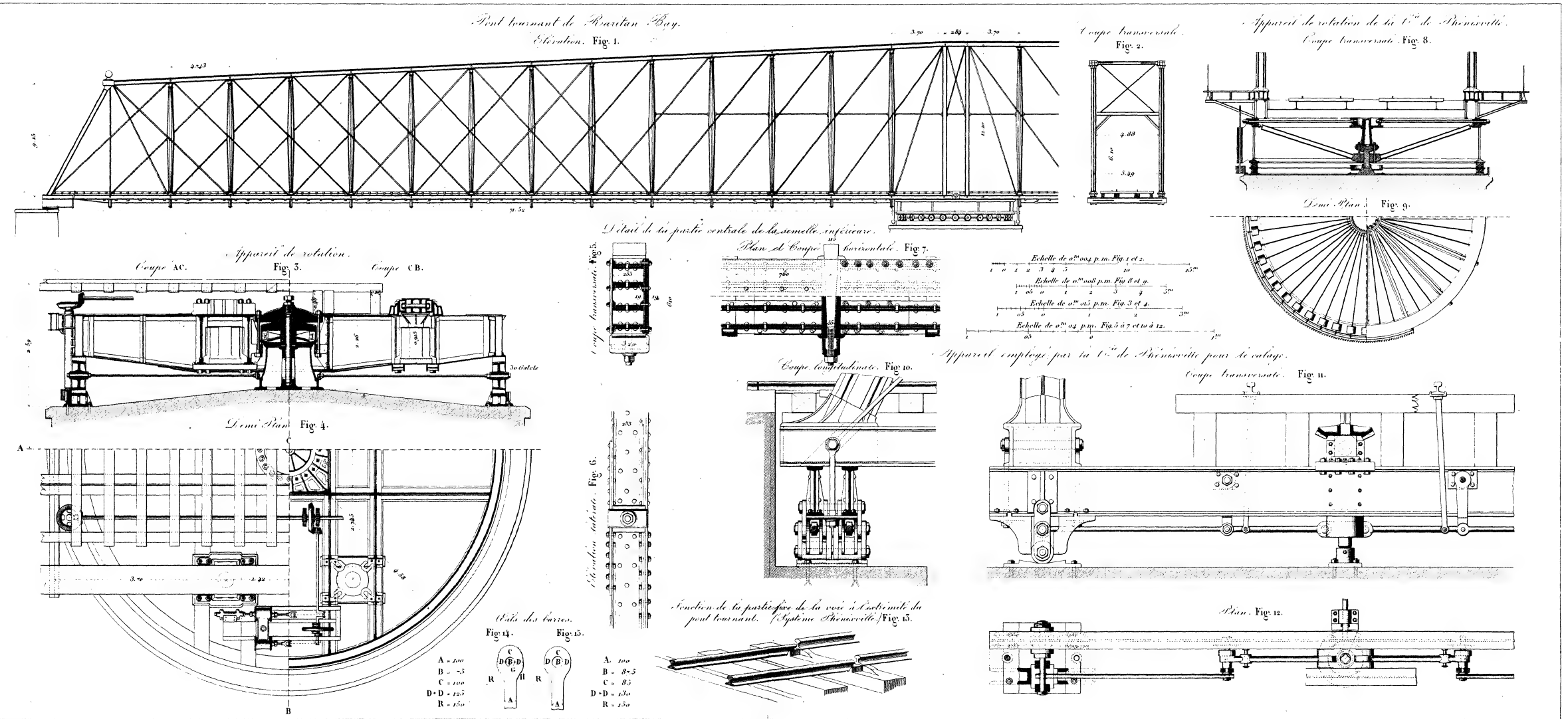


Fig. 12.

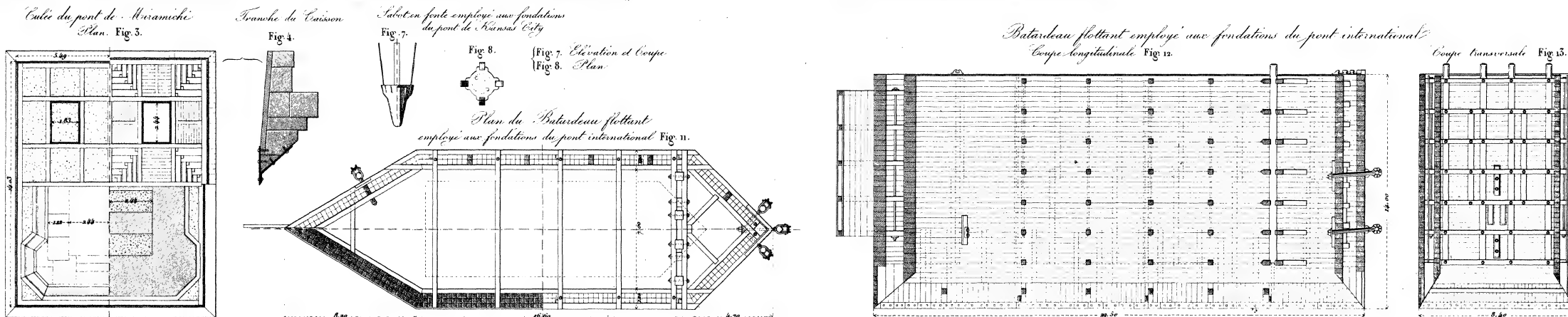
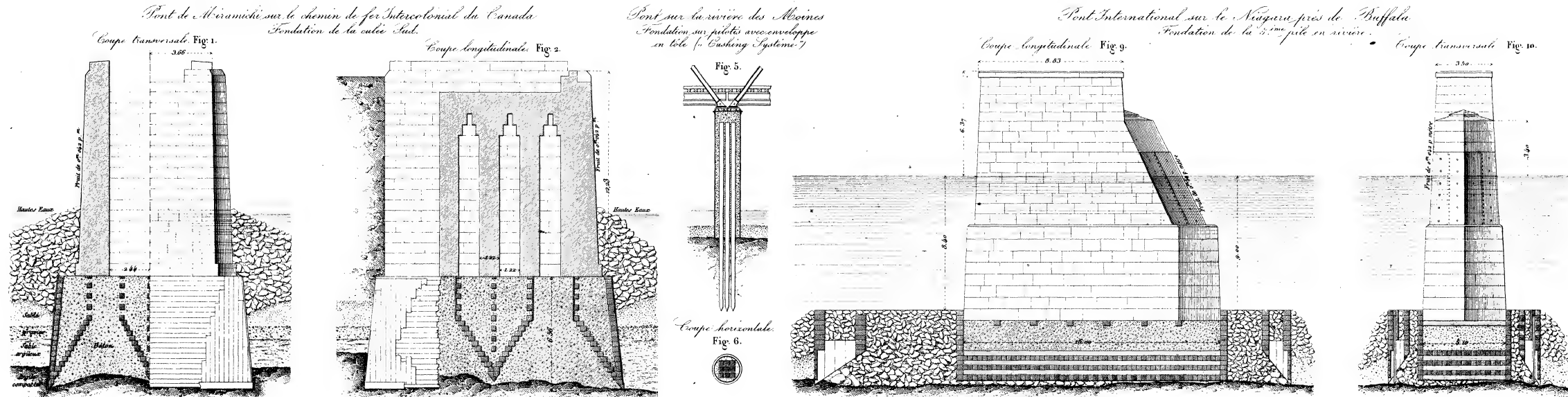


Gravé par Perot









Echelle de 0<sup>m</sup>005 p.m. Fig. 1, 2, 3, 6, 8 et 9 à 13.

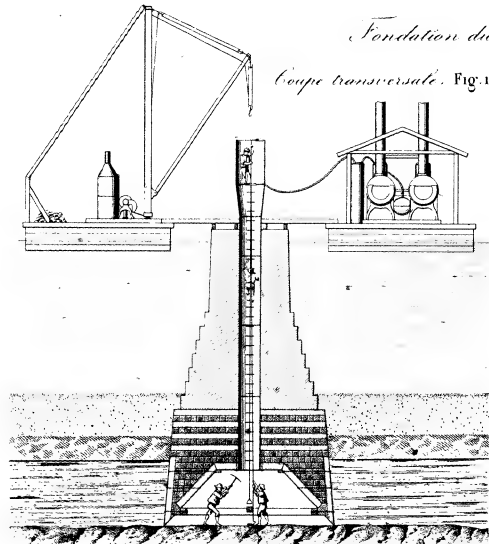
Echelle de 0<sup>m</sup>005 p.m. Fig. 4.

Echelle de 0<sup>m</sup>005 p.m. Fig. 7 et 8.

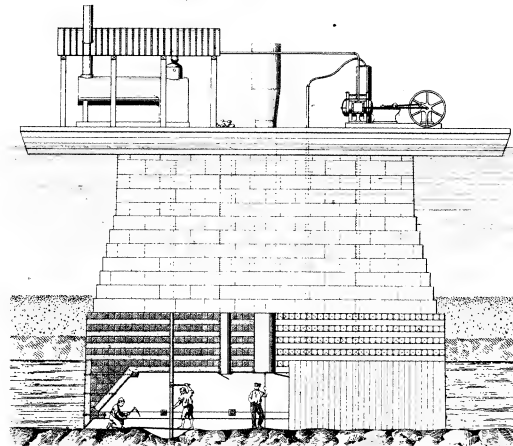


Fondation du Pont d'Atchison sur le Missouri.

Coupe transversale. Fig. 1.

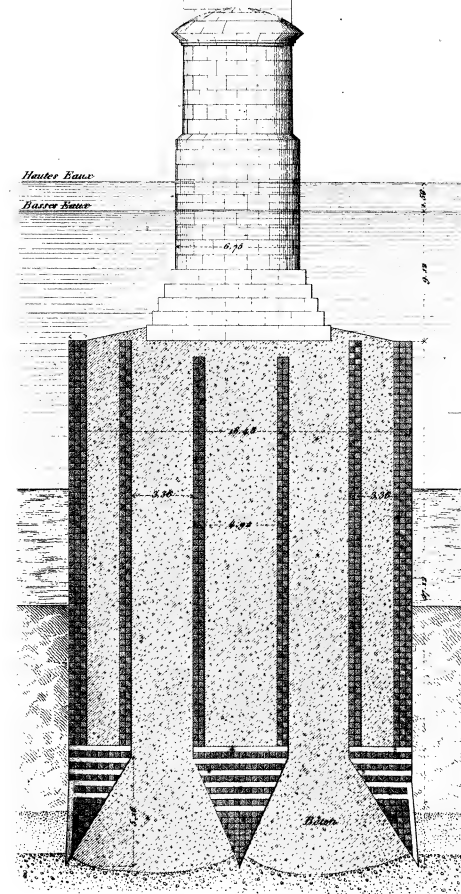


Coupe longitudinale. Fig. 2.

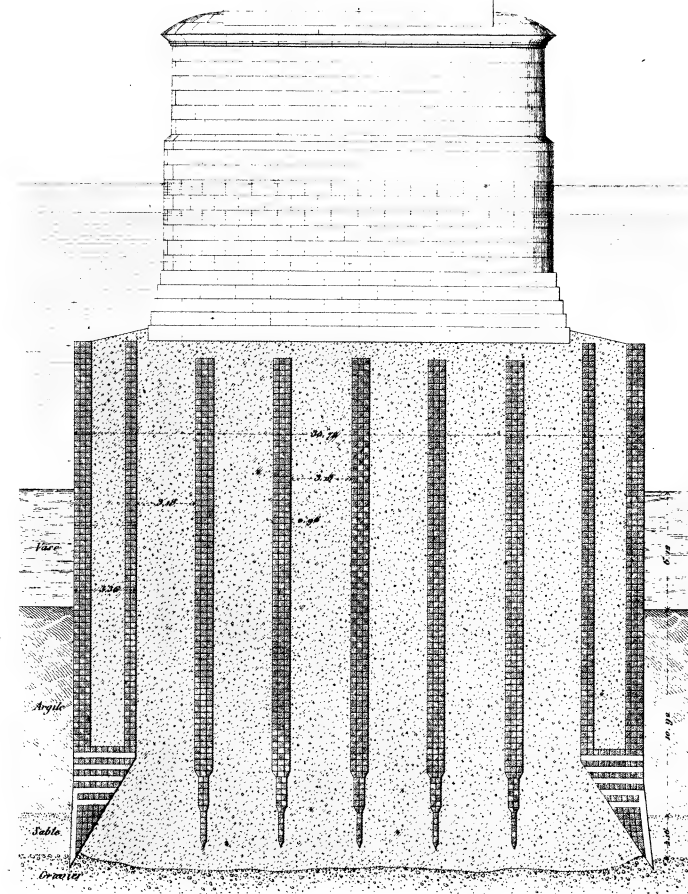


Fondation du Pont de Roughkepsic sur l' Hudson.

Coupe transversale. Fig. 6.

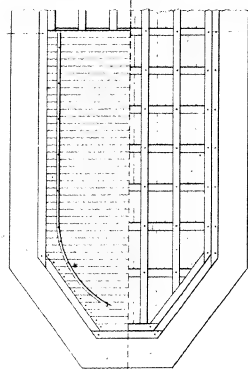


Coupe longitudinale. Fig. 7.

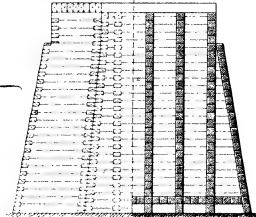


Fondation par enrochement (Aril.)

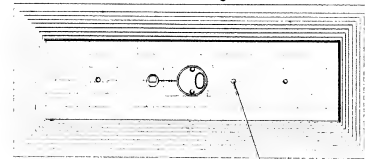
Demi Plan. Fig. 4.



Elevation et Coupe 1/2. Fig. 5.



Plan. Fig. 5.

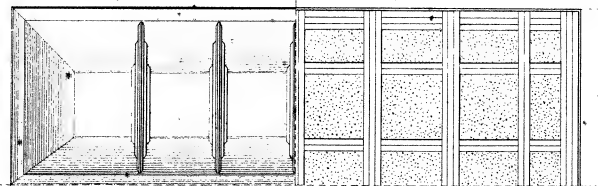


Demi Plan d'un caisson du Pont de Roughkepsic.

Vue par dessous.

Fig. 8.

Coupe horizontale.

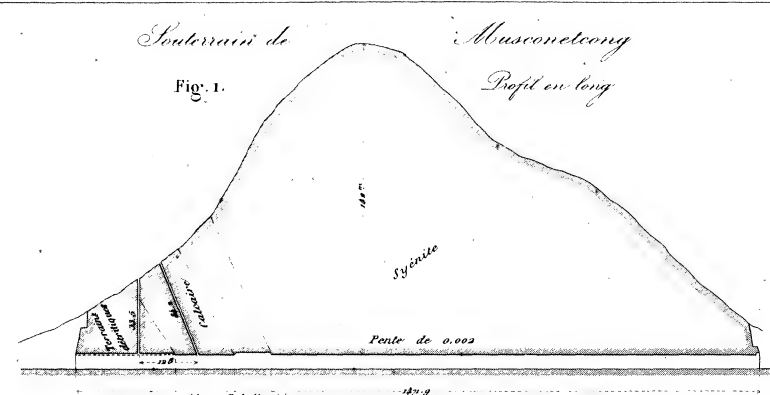


Echelle de 0<sup>m</sup> 005 p. m. Fig. 1 à 5.

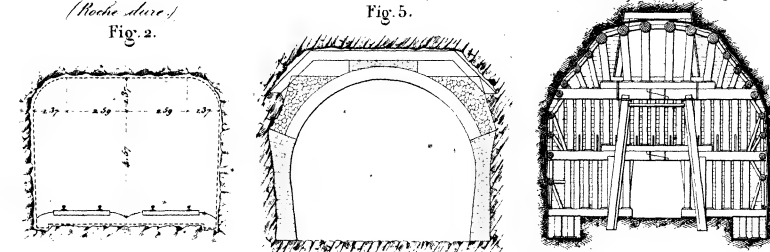
Echelle de 0<sup>m</sup> 005 p. m. Fig. 6 à 8.



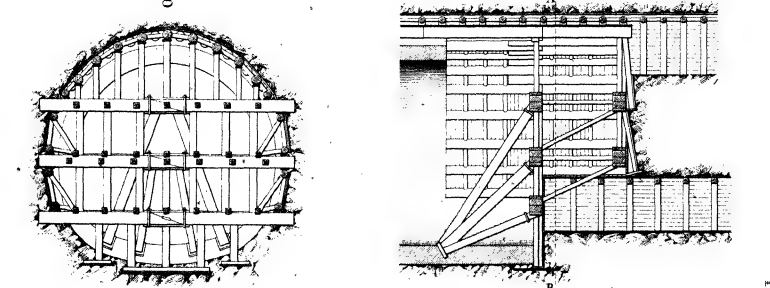




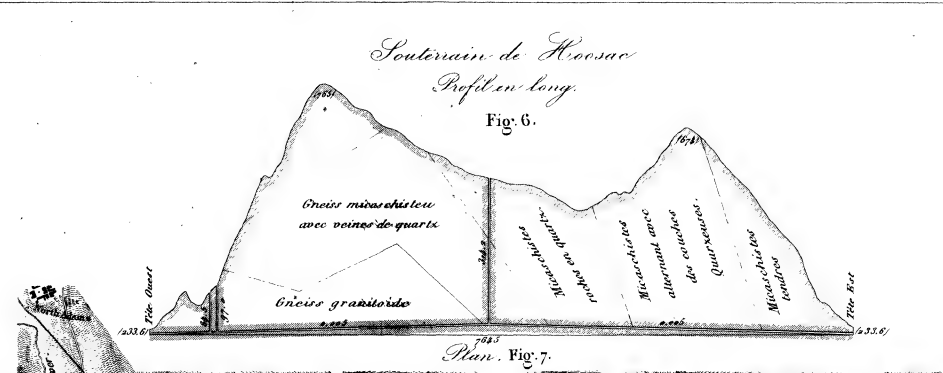
Coups transversés du Souterrain de Musconcong.  
(Roche tendre) (Roche désagrégée) Fig. 4.



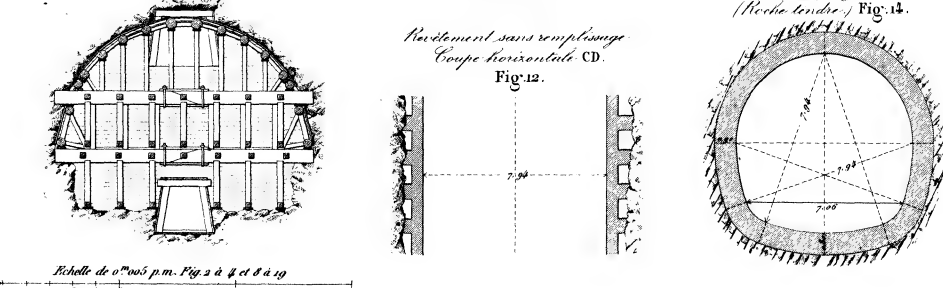
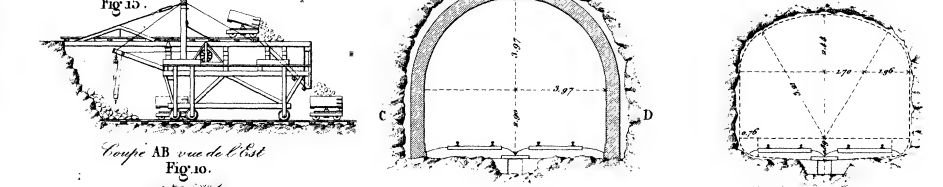
Coupe AB vue de l'Ouest Fig. 8.  
Boisages dans le Souterrain de Hoosac.  
Coupe longitudinale Fig. 9.



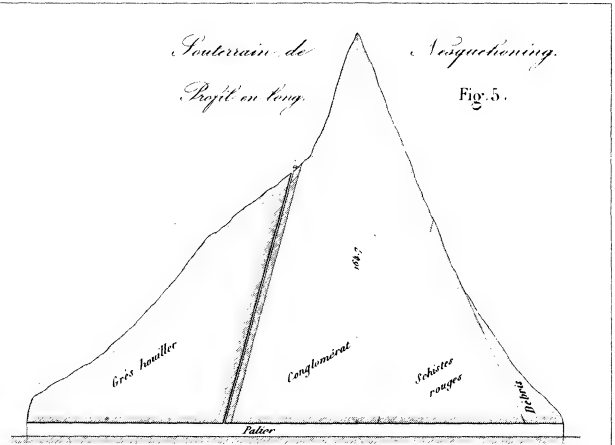
Échelle de 0.005 p.m. Fig. 2 à 4 et 8 à 10



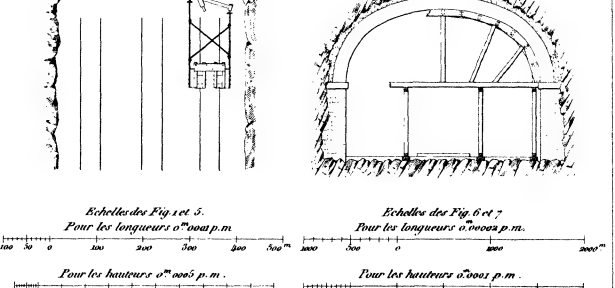
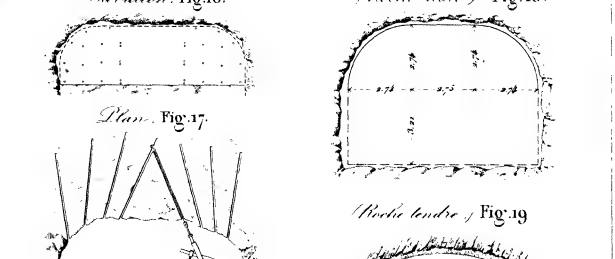
Pont mobile pour chargement employé aux Hoosac et Musconcong Tunnel. Fig. 13.



Échelle de 0.005 p.m. Fig. 10 à 15



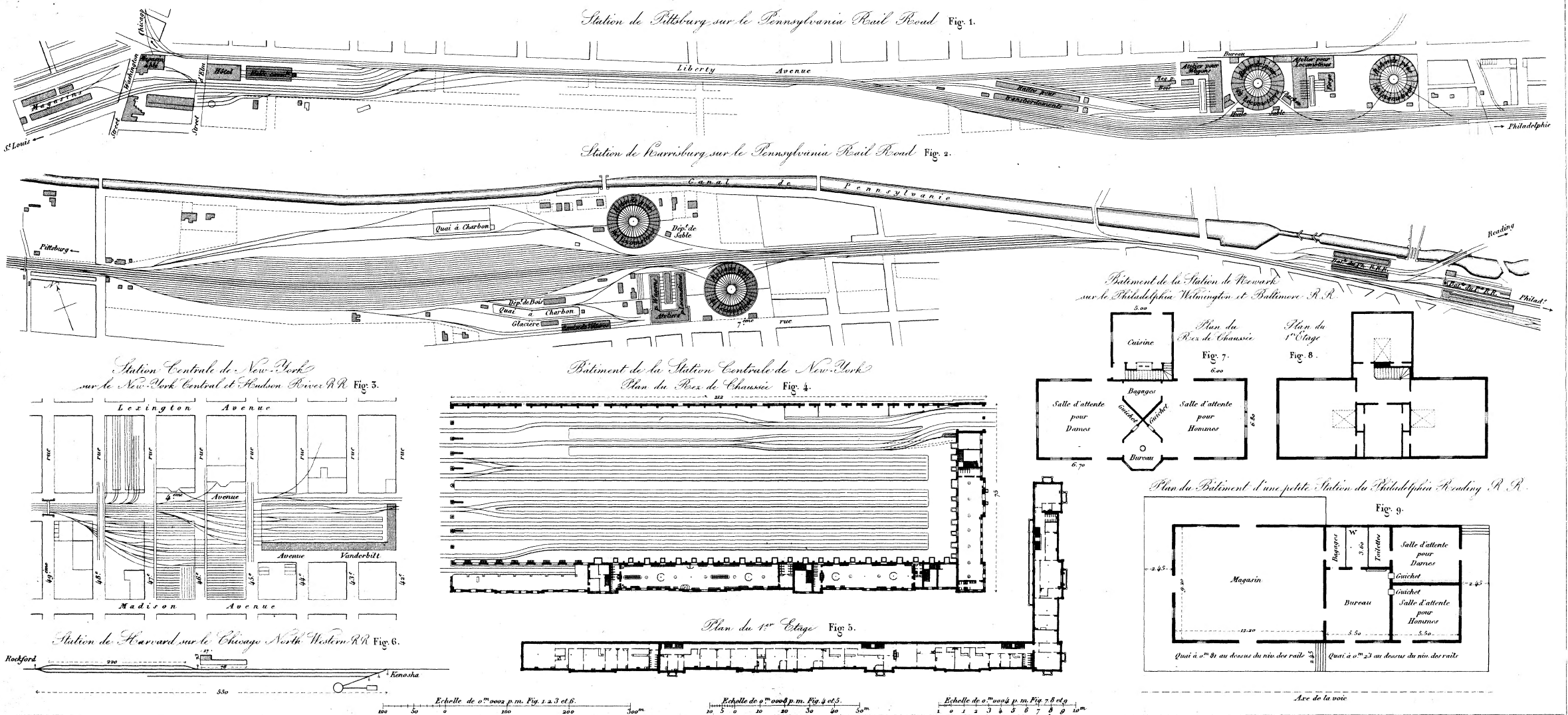
Système d'attaque pour l'avancement. Fig. 16.



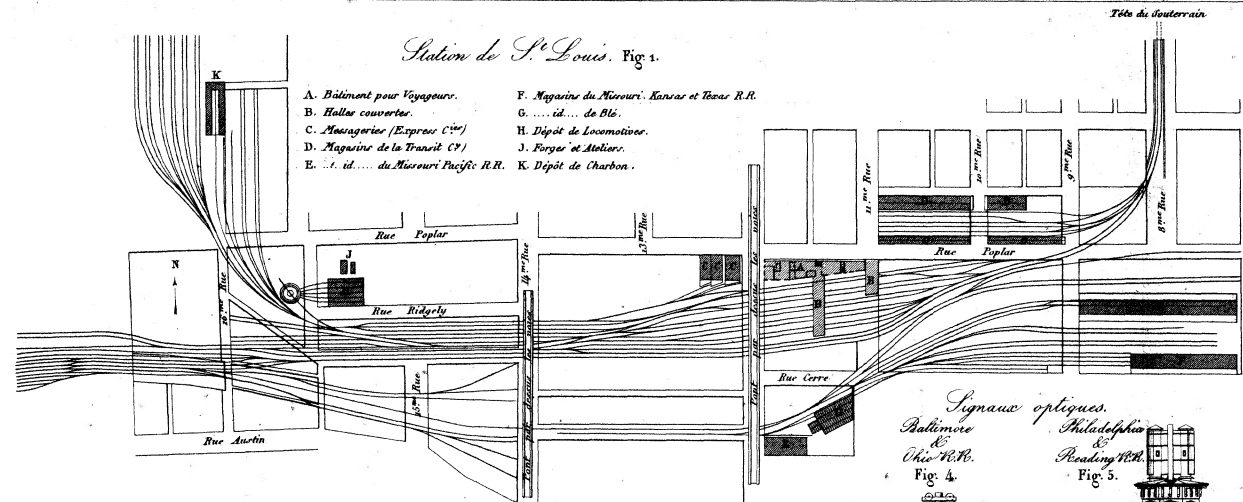
Échelle des Fig. 5 et 17. Pour les longueurs 0.0005 p.m.  
Échelle des Fig. 6 et 7. Pour les longueurs 0.0005 p.m.  
Échelle des Fig. 18 et 19. Pour les hauteurs 0.0005 p.m.



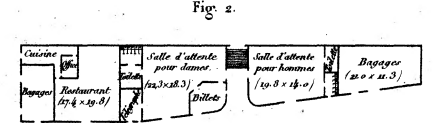
STATIONS ET BATIMENTS.



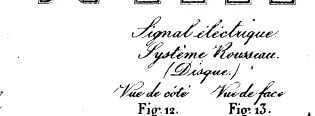
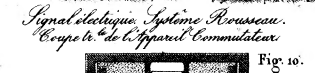
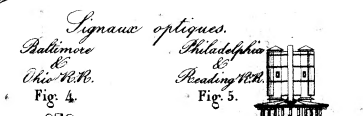
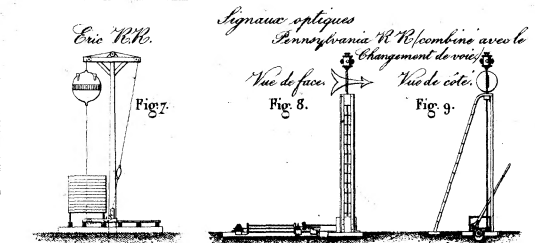
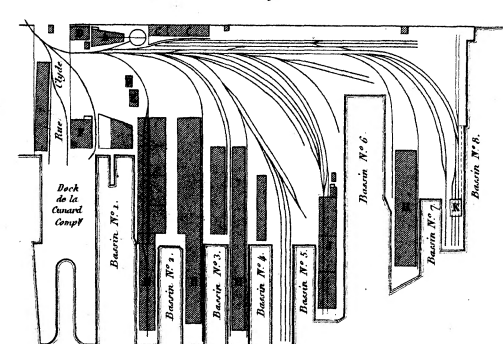




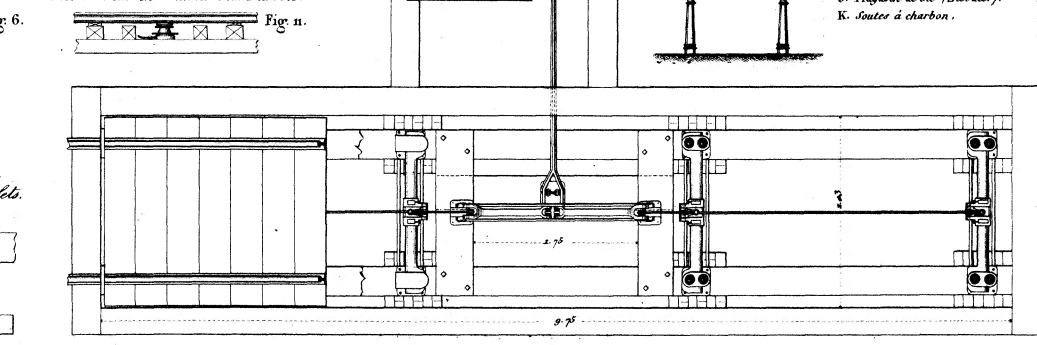
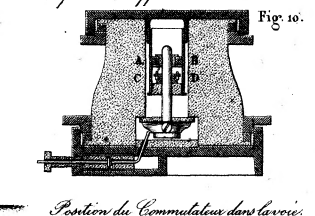
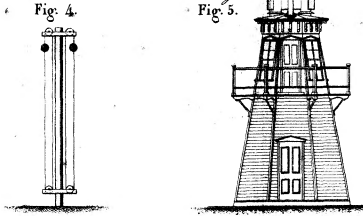
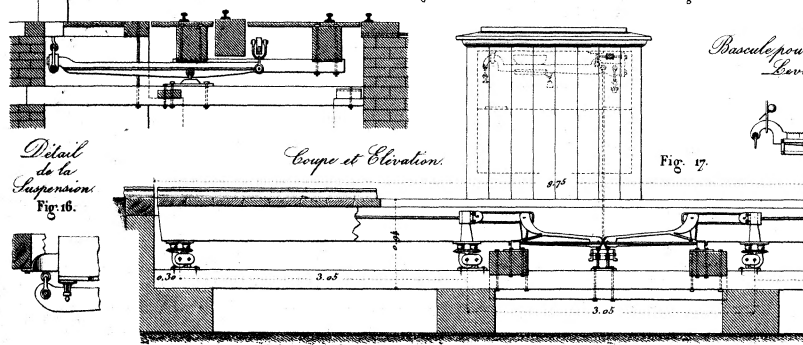
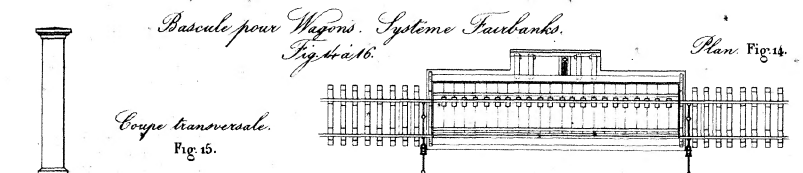
Plan du Bâtiment de la Station des St. Louis.



Gare maritime de Boston du Boston et Albany R.R. Fig. 3.



- Legende de la Fig. 3.
- A. Dépôt de Locomotives.
  - B. Bourée
  - C. Haller pour marchandises.
  - D. Atelier de réparation.
  - E. Bureaux.
  - F. Dépôt de Charbon.
  - G. Entrepôt de Douane.
  - H. Hangars ouverts.
  - J. Magasin de blé (Elevator).
  - K. Soutes à charbon.



Echelle de 0<sup>m</sup>0005 p.m. Fig. 1 et 3. Echelle de 0<sup>m</sup>0008 p.m. Fig. 2. Echelle de 0<sup>m</sup>001 p.m. Fig. 4 à 16. Echelle de 0<sup>m</sup>05 p.m. Fig. 17, 18 et 20. Echelle de 0<sup>m</sup>05 p.m. Fig. 19. Echelle de 0<sup>m</sup>05 p.m. Fig. 10.

